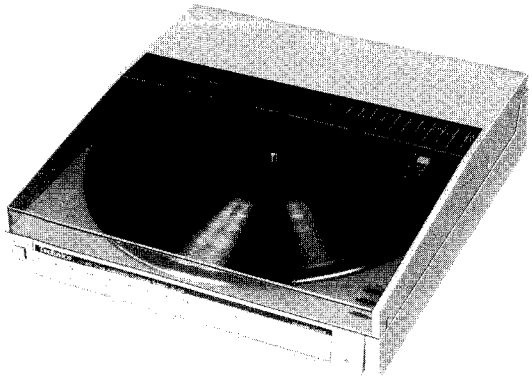
ORDER NO. DAD83120041C9

# Service Manual

## Quartz Direct Drive Automatic Turntable System

# SL-Q6/(K)

[E], [EK], [XL], [EG], [EB], [EH], [EF], [Ei], [EC], [XA], [XM], [PA], [PE], [PC]



T4P is the standard mark for plug-in-connector type. Products carrying this mark are interchangeable and adaptable among each other.

* The colors of this model include silver and black.
* The black type model is provided with (K) in the Service Manual.

**Areas**

* [E] is available in Switzerland and Scandinavia.
* [EK] is available in United Kingdom.
* [XL] is available in Australia.
* [EG] is available in F.R. Germany.
* [EB] is available in Belgium.
* [EH] is available in Holland.
* [EF] is available in France.
* [Ei] is available in Italy.
* [EC] is available in Czechoslovakia.
* [XA] is available in Southeast Asia, Oceania, Africa, Middle Near East and Central South America.
* [XM] is available in Central South America.
* [PA] is available in far East PX.
* [PE] is available in European Military.
* [PC] is available in European Audio Club.

**Please use this manual together with the service manual for Model No. SL-Q6, Order No. DAD83110039C1.**

English

## Specifications

Specifications are subject to change without notice for further improvement.
Weight and dimensions shown are approximate.

### ■ General

| | |
|---|---|
| **Power supply:** | For United Kingdom and Australia:<br>240V AC, 50Hz<br>For continental Europe:<br>220V AC, 50Hz<br>For others:<br>~110-120/220-240V, 50 or 60 Hz |
| **Power consumption:** | 12 W |
| **Dimensions:**<br>**(W x H x D)** | 31.5 x 8.8 x 31.5 cm<br>(12-1/2" x 3-1/2" x 12-1/2")<br>31.5 x 39 x 31.5 cm<br>(12-1/2" x 15-23/64" x 12-1/2")<br>(Maximum height when top (dust cover) is open.) |
| **Weight:** | 4.3 kg (9.5 lb.) |

### ■ Turntable section

| | |
|---|---|
| **Type:** | Direct drive<br>Automatic turntable |
| **Features:** | Auto start/Auto lead-in<br>Auto return<br>Auto stop<br>Programmable band selection<br>Repeat play<br>Auto speed select<br>Manual speed selection possible<br>Auto size select<br>Record presence detection |
| **Dirve method:** | Direct drive |
| **Motor:** | Brushless DC motor |
| **Drive control method:** | Quartz-phase-locked control |
| **Turntable platter:** | Aluminum die-cast<br>Diameter 30 cm (12") |
| **Turntable speeds:** | 33-1/3 rpm and 45 rpm<br>Auto speed select<br>(Manual selection possible) |
| **Wow and flutter:** | 0.012% WRMS*<br>0.025% WRMS (JIS C5521)<br>± 0.035% peak<br>(IEC 98A Weighted) |

* Measured by obtaining signal from built-in frequency generator of motor assembly.

| | |
|---|---|
| **Rumble:** | –56 dB (IEC 98A Unweighted)<br>–78 dB (IEC 98A Weighted) |

### ■ Tonearm section

| | |
|---|---|
| **Type:** | Dynamic balanced type<br>Linear tracking tonearm<br>4-pivot gimbal suspension |
| **Effective length:** | 10.5 cm (4-1/8") |
| **Tracking error angle:** | Within ± 0.1° |
| **Effective mass:** | 9 g (including cartridge) |
| **Resonance frequency:** | 12 Hz |
| **Tonearm drive motor:** | DC motor |
| **Phono cable capacitance:** | 200 pF |


Technics

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P.O. Box 288, Central Osaka Japan

Panasonic Tokyo
Matsushita Electric Industrial Co., Ltd.
1-2, 1-chome, Shibakoen, Minato-ku, Tokyo 105 Japan

# SL-Q6

English

## ■ Cartridge section

| | |
|---|---|
| **Type:** | Moving magnet stereo cartridge<br>EPC-P28S (For [PA], [PE] and [PC] areas)<br>EPC-P33S (For others) |
| **Magnet circuit:** | All laminated core |
| **Frequency response:** | 10 Hz ~ 50 kHz<br>20 Hz ~ 10 kHz ± 1 dB |
| **Output voltage:** | 2.5 mV at 1 kHz, 5 cm/s. zero to peak lateral velocity<br>(7 mV at 1 kHz, 10 cm/s. zero to peak 45° velocity [DIN 45 500]) |
| **Channel separation:** | More than 22 dB at 1 kHz |
| **Channel balance:** | Within 1.8 dB at 1 kHz |
| **Recommended load impedance:** | 47 kΩ ~ 100 kΩ |
| **Compliance (dynamic):** | $12 \times 10^{-6}$ cm/dyne at 100 Hz |
| **Stylus pressure range:** | 1.25 ± 0.25 g (12.5 ± 2.5 mN) |
| **Weight:** | 6 g (cartridge only) |
| **Replacement stylus:** | EPS-28ES (For [PA], [PE] and [PC] areas)<br>EPS-33ES (For others)<br>(Elliptical stylus) |

- The power supply for this unit varies depending upon the areas. Also, the parts used for power supply are different. So, refer to the circuit diagram and the replacement parts list.
  - ★ 220V (50/60 Hz) for Continental Europe.
  - ★ 240V (50/60 Hz) for United Kingdom and Australia.
  - ★ 110V-120V/220V-240V (50/60 Hz) for other areas.
  - ★ [EK], [XA], [XM], [PA], [PE] and [PC] areas are provided with voltage selector.

Deutsch

# TECHNISCHE DATEN

Änderungen der technischen Daten vorbehalten.
Die angegebenen Gewichts- und Abmessungsdaten sind circa Werte.

## ■ Allgemeine Daten

| | |
|---|---|
| **Stromversorgung:** | ~220V, 50 Hz<br>Wechselstrom |
| **Leistungsaufnahme:** | 12 W |
| **Abmessungen:** | 31,5 x 8,8 x 31,5 cm |
| **(B x H x T)** | 31,5 x 39 x 31,5 cm<br>(Maximale Höhe bei vollständig geöffnetem Gehäuseoberteil) |
| **Gewicht:** | 4.3 kg |

## ■ Plattenspieler

| | |
|---|---|
| **Typ:** | Direktangetriebener<br>automatischer Plattenspieler<br>Auto-Start/Auto-Zuführung<br>Rückführautomatik<br>Stopp-Automatik<br>Programmierbare Musikstück-Auswahl<br>Wiederhol-Betrieb<br>Automatische Drehzahlwahl<br>Manuelle Drehzahlwahl möglich<br>Automatische Plattengrößewahl<br>Plattenpräsenz-Registrierung |
| **Antrieb:** | Direktantrieb |
| **Motor:** | Kollektorloser Gleichstrommotor |
| **Antriebsregel-Methode:** | Quarz-Steuerung (QPL) |
| **Plattenteller:** | Aluminium-Druckguß<br>Durchmesser 30 cm |
| **Plattenteller-Drehzahlen:** | 33-1/3 und 45 U/min<br>Automatische Drehzahlwahl<br>(manuelle Wahl möglich) |
| **Gleichlaufschwankungen:** | 0,012% WRMS*<br>0,025% WRMS (JIS C5521)<br>± 0.035% Spitze<br>(IEC 98A bewertet) |

* Gemessen anhand von Signalen vom eingebauten Frequenzgenerator des Motorbauteils.

| | |
|---|---|
| **Rumpel-Fremd-spannungsabstand:** | −56 dB (IEC 98A unbewertet) |
| **Rumpel-Geräusch-spannungsabstand:** | −78 dB (IEC 98A bewertet) |

## ■ Tonarm

| | |
|---|---|
| **Typ:** | Dynamisch ausbalancierter Tangential-Tonarm mit Kardanaufhängung mit 4-Punkt-Drehlager |
| **Effektive Länge:** | 10,5 cm |
| **Spurfehlwinkel:** | Innerhalb ± 0,1° |
| **Effektive Masse:** | 9 g (einschließlich Tonabnehmer) |
| **Resonanzfrequenz:** | 12 Hz |
| **Tonarm-Antriebsmotor:** | Gleichstrommotor |
| **Phonokabel-Kapazität:** | 200 pF |

## ■ Tonabnehmer

| | |
|---|---|
| **Typ:** | Stereo-Magnet-Tonabnehmer |
| **Magnetkreis:** | Ganzlamellenkern |
| **Frequenzgang:** | 10 Hz bis 50 kHz<br>20 Hz bis 10 kHz ± 1 dB |

| | | | |
|---|---|---|---|
| **Ausgangsspannung:** | 2,5 mV bei 1 kHz<br>5 cm/s. Null-zu-Spitze, lateral<br>(7 mV bei 1 kHz 10 cm/s.<br>Null-zu-Spitze, 45° [DIN 45 500] ) | **Nachgiebigkeit (dynamisch):** | 12 x $10^{-6}$ cm/dyn bei 100 Hz |
| **Kanaltrennung:** | 22 dB bei 1 kHz | **Auflagekraft-Einstellbereich:** | 1,25 ± 0,25 g (12,5 ± 2,5 mN) |
| **Kanalabweichung:** | Innerhalb 1,8 dB bei 1 kHz | **Gewicht:** | 6 g (nur Tonabnehmer) |
| **Empfohlene Endimpedanz:** | 47 kΩ ~ 100 kΩ | **Ersatznadel:** | EPS-33ES (Elliptische Nadel) |

Français

# CARACTERISTIQUES

Les spécifications sont susceptibles d'être modifiées sans préavis.
Le poids et les dimensions donnés sont approximatifs.

## ■ Généralités

| | |
|---|---|
| **Alimentation:** | Alternatif 220V, 50 Hz |
| **Consommation:** | 12 W |
| **Dimensions:** (L x H x P) | 31,5 x 8,8 x 31,5 cm<br>31,5 x 39 x 31,5 cm<br>(Hauteur maximum lorsque le dessus (couvercle protègepoussière) est ouvert.) |
| **Poids:** | 4,3 kg |

## ■ Platine de lecture

| | |
|---|---|
| **Type:** | Entraînement direct<br>Platine automatique<br>Départ automatique/Entrée automatique<br>Retour automatique<br>Sélection de plages programmable<br>Arrêt automatique<br>Auditon répétée<br>Sélection de vitesse automatique<br>Sélection automatique du diamètre<br>Sélection de vitesse manuelle possible<br>Détection de la présence d'un disque |
| **Système d'entraînement:** | Entraînement direct |
| **Moteur:** | Moteur C.C. sans balai |
| **Système de commande d'entraînement:** | Réglage d'accrochage de phase par quartz |
| **Plateau de lecture:** | Aluminium moulé sous pression<br>Diamètre 30 cm |
| **Vitesses de la platine:** | 33-1/3 et 45 t/p.m.<br>Sélecteur de vitesse automatique<br>(Sélection manuelle possible) |
| **Pleurage et scintillement:** | 0,012% de valeur efficace*<br>0,025% de valeur efficace<br>(JIS C5521)<br>± 0,035% de crête<br>(IEC 98A Pondéré) |

* Mesuré par l'obtention d'un signal provenant du générateur de fréquences incorporé de l'ensemble du moteur.

| | |
|---|---|
| **Ronflement:** | −56 dB (IEC 98A Non Ponddéré)<br>−78 dB (IEC 98A Pondéré) |

## ■ Bras de lecture

| | |
|---|---|
| **Type:** | Bras de lecture d'alignement linéaire de type à équilibre dynamique avec suspension à la cardan à 4 pivots |
| **Longueur effective:** | 105 mm |
| **Angle d'erreur de piste:** | En deçà de ± 0,1° |
| **Masse réelle:** | 9 g (y compris la cellule pick-up) |
| **Fréquence de résonance:** | 12 Hz |
| **Moteur d'entraînement du bras de lecture:** | Moteur C.C. |
| **Capacitance du câble phono:** | 200 pF |

## ■ Cellule pick-up

| | |
|---|---|
| **Type:** | Cellule pick-up stéréo à aimant mobile |
| **Circuit magnétique:** | Noyau entièrement feuilleté |
| **Réponse en fréquence:** | 10 Hz à 50 kHz<br>20 Hz à 10 kHz ± 1 dB |
| **Tension de sortie:** | 2,5 mV à 1 kHz; 5 cm/s. zéro à vitesse latérale de crête<br>(7 mV à 1 kHz; 10 cm/s. zéro à vitesse 45° de crête [DIN 45 000] ) |
| **Séparation des canaux:** | 22 dB à 1 kHz |
| **Equilibrage des canaux:** | En deçà de 1,8 dB à 1 kHz |
| **Impédance de charge recommandée:** | 47 kΩ ~ 100 kΩ |
| **Elasticité (dynamique):** | 12 x $10^{-6}$ cm/dyne à 100 Hz |
| **Plage de la force verticale d'appui:** | 1,25 ± 0,25 g (12,5 ± 2,5 mN) |
| **Poids:** | 6 g (cellule seule) |
| **Remplacement de la pointe de lecture:** | EPS-33ES (Forme elliptique) |



Español

# ESPECIFICACIONES

Las especificaciones quedan sujetas a cambios sin aviso previo.
Los pesos y las dimensiones indicados son aproximativos.

## ■ En general

| | |
|---|---|
| **Alimentación de corriente:** | ~ 110-120/220-240V, 50 ó 60 Hz |
| **Consumo de corriente:** | 12 W |
| **Dimensiones:** (Ancho x Alto x Prof.) | 31,5 x 8,8 x 31,5 cm<br>31,5 x 39 x 31,5 cm<br>(Altura máxima cuando la parte de arriba(tapa contra el polvo)está abierta.) |
| **Peso:** | 4,3 kg |

## ■ Sección del plato giratorio

| | |
|---|---|
| **Tipo:** | Accionamiento directo<br>Plato giratorio automático<br>Arranque automático/Comienzo automático<br>Retorno automático<br>Parada automática<br>Selección programable de bandas<br>Ejecución repetida<br>Selección automática de la velocidad<br>Es posible seleccionar la velocidad a mano<br>Selección automática del tamaño<br>Detección de presencia de disco |
| **Método de accionamiento:** | Accionamiento directo |
| **Motor:** | Motor de corriente continua sin escobillas |
| **Método de control de accionamiento:** | Control enclavado de fase de cuarzo |
| **Platillo del plato giratorio:** | Aluminio fundido<br>30 cm de diámetro |
| **Velocidades del plato giratorio:** | 33-1/3 y 45 rpm<br>Selección automática de la velocidad<br>(También posibilidad de seleccionar a mano) |
| **Ululaciones y trémolo:** | 0,012% WRMS*<br>0,025% WRMS (JIS C5521)<br>± 0,035% cresta<br>(IEC 98A Ponderado) |

* Medido obteniendo una señal proveniente del generador de frecuencias incorporado del conjunto del motor.

| | |
|---|---|
| **Ruido de rodadura:** | −56 dB (IEC 98A Non ponderado)<br>−78 dB (IEC 98A ponderado) |

## ■ Sección del brazo sonoro

| | |
|---|---|
| **Tipo:** | Brazo sonoro de seguimiento lineal de tipo con equilibrio dinámico con suspensión cardánica de 4-pivotes |
| **Longitud efectiva:** | 10,5 cm |
| **Angulo de error de seguimiento:** | Inferiro a ± 0,1° aproxim. |
| **Masa efectiva:** | 9 g (incluyendo el cartucho) |
| **Frecuencia de resonancia:** | 12 Hz |
| **Motor de accionamiento del brazo sonoro:** | Motor de corriente continua |
| **Capitancia del cable del fonógrafo:** | 200 pF |

## ■ Sección del cartucho

| | |
|---|---|
| **Tipo:** | Cartucho estereofónido de imán móvil |
| **Circuito magnético:** | Núcleo totalmente laminado |
| **Respuesta de frecuencia:** | 10 Hz a 50 kHz<br>20 Hz a 10 kHz ± 1 dB |
| **Voltaje de salida:** | 2,5 mV a 1 kHz<br>Velocidad lateral de cero a cresta de 5 cm/s. (7 mV a 1 kHz. Velocidad de 45° de cero a cresta de 10 cm/s. [DIN 45 000] ) |
| **Separación de canales:** | 22 dB a 1 kHz |
| **Equilibrio de canales:** | Inferior a 1,8 dB a 1 kHz |
| **Impedancia de carga recomendada:** | 47 kΩ a 100 kΩ |
| **Elasticidad (dinámica):** | 12 x $10^{-6}$ cm/dina a 100 Hz |
| **Radio de presión de la aguja:** | 1,25 ± 0,25 g (12,5 ± 2,5 mN) |
| **Peso:** | 6 g (cartucho solamente) |
| **Aguja de recambio:** | EPS-33ES (Aguja eliptica) |

## ■ ADJUSTMENT POINTS

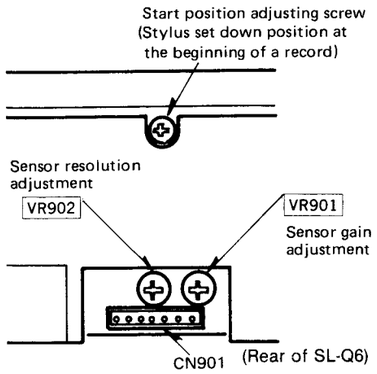



Fig. 1 (Abb. 1)

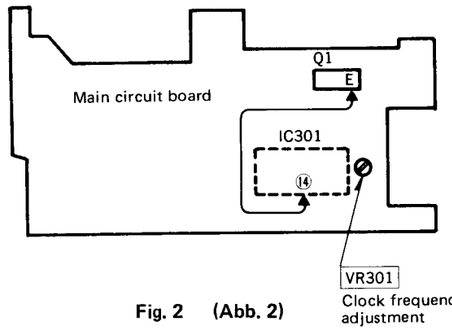



Fig. 2 (Abb. 2)

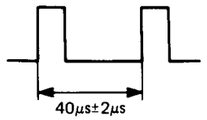



Fig. 3 (Abb. 3)

Fig. 5 (Abb. 5)

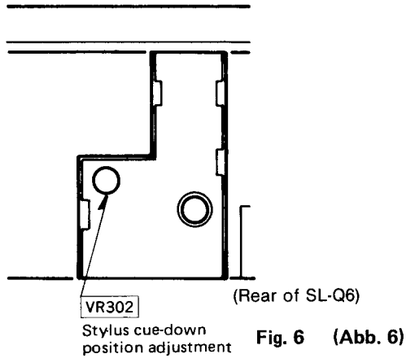
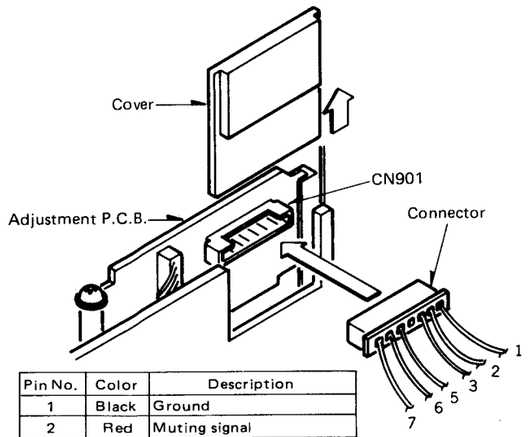



Fig. 6 (Abb. 6)




| Pin No. | Color | Description |
|---|---|---|
| 1 | Black | Ground |
| 2 | Red | Muting signal |
| 3 | Orange | Cueing signal |
| 6 | Blue | Sensor amp. output signal |
| 7 | Violet | Filter amp. output signal |

Fig. 4 (Abb. 4)

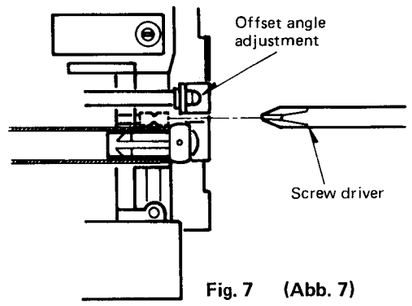



Fig. 7 (Abb. 7)

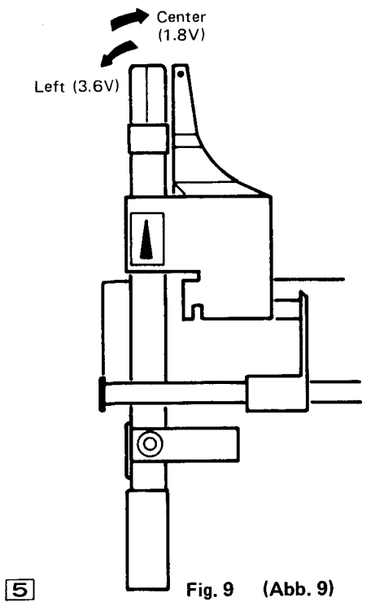



Fig. 9 (Abb. 9)

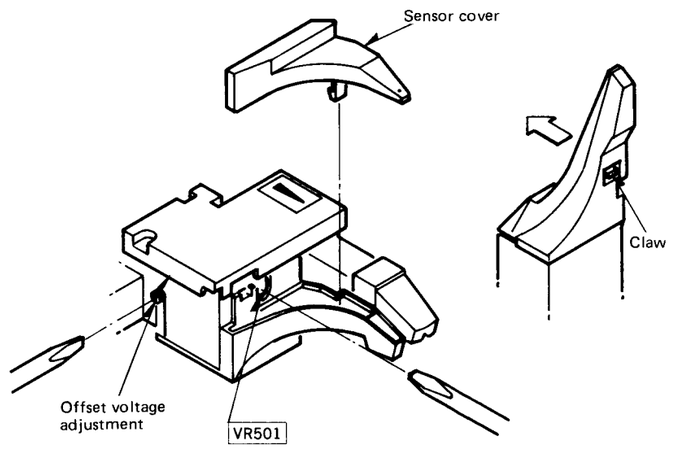



Fig. 8 (Abb. 8)



## ■ MEASUREMENTS AND ADJUSTMENTS ■ English

- **Equipment used and condition of the set**

1. Oscilloscope (two channels)
2. DC voltmeter.
3. Record (SFTR007) for adjustment.
4. Connector (SZZP1010F) for adjustment.
5. Set the optical sensor sensitivity selector to "M".

| Step | Item | Preparations for adjustment | Adjusting portion | Adjusting method |
|---|---|---|---|---|
| 1 | **Start position** | 1. Open the upper cabinet and put on the record.<br>2. Turn the power switch on.<br>3. Push the "Start" switch. | Start position adjusting screw. (Fig. 1) | 1. Turn the start position adjusting screw. If it descends between tunes, turn the screw counter clockwise. |
| 2 | **Clock frequency** | 1. Connect Q1 emitter to IC301 14-pin. (Fig. 2)<br>2. Connect the oscilloscope to IC301 13-pin. | VR301 (Fig. 2) | 1. Turn the power switch on.<br>2. Adjust VR301 so that the cycle of output waveform is 40μs ± 2μs (Fig. 3) |
| 3 | **Sensor gain** | 1. Remove the cover and insert the connector for adjustment into terminal CN901. (Fig. 4)<br>2. Connect the oscilloscope to 6-pin (+) and 1-pin (−).<br>3. Put on the record for adjustment with side A up. | VR901 (Fig. 1) | 1. Turn the power switch on.<br>2. Tonearm is on the rest position. (Blank area of the record.)<br>3. Adjust VR901 so that the output voltage is 4V ± 0.4V. |
| 4 | **Sensor resolution** | 1. Remove the cover insert the connector for adjustment into terminal CN901. (Fig. 4)<br>2. Connect the oscilloscope to 7-pin (+) and 1-pin (−).<br>3. Put on the record for adjustment with side A up. | VR902 (Fig. 1) | 1. Turn the power switch on.<br>2. Push the program key to let it search the tonearm. (Output is delivered between the tunes.)<br>3. between tunes is 3V ± 0.3V. (Fig. 5) |
| 5 | **Stylus cue-down position** | 1. Open the upper cabinet and hold the cabinet switch with tape.<br>2. Put on the record for adjustment with side B up.<br>3. Close the upper cabinet.<br>4. Connect the unit to the amplifier. (Connect the speakers to the speaker terminals.) | VR302 (Fig. 6) | 1. Turn the power switch on.<br>2. Push the program key 2, followed by start switch.<br>3. After completion of cueing down, push the program key 2 for the purpose of skipping.<br>4. Make sure that descending position is at count "18 ~ 19".<br>5. Adjust VR302 so that the decending position is at count 18 ~ 19". |
| 6 | **Tonearm offset angle** | 1. Open the upper cabinet and hold the cabinet switch with tape.<br>2. Close the upper cabinet. | Adjusting screw (Fig. 7) | 1. Turn the power switch on and push the start switch to shift the tonearm inward.<br>2. Open the upper cabinet.<br>3. Turn the adjusting screw so that the arm center matches the V-groove of the lift bar. |
| 7 | **Servo gain and offset voltage** | 1. Open the upper cabinet and hold the cabinet switch with the tape.<br>2. Close the upper cabinet.<br>3. Connect the DC voltmeter to CN301 terminal 5 and ground terminal.<br>4. Remove the sensor cover (Fig. 8) | VR501 (Servo gain) Screw (Offset voltage) (Fig. 8, 9) | 1. Turn the power switch on and push the start switch to shift the tonearm inward.<br>2. Open the upper cabinet.<br>3. Completely shift the tonearm to the left. Then, adjust VR501 so that the voltage is 3.6V. **(Servo gain)**<br>4. Set the tonearm to the center and make sure that the output voltage is 1.8V.<br>5. If the voltage is not 1.8V, adjust screw so that the output voltage is 1.8V. **(Offset voltage)** |

## ■ MESSUNGEN UND JUSTIERUNGEN — Deutsch

- **Zu verwendende Instrumente und Einstellungen am Gerät**

1. Oszilloskop (zwei Kanäle)
2. Gleichstrom-Voltmeter
3. Schallplatte (SFTR007) für die Abstimmung
4. Anschluß (SZZP1010F) für die Abstimmung
5. Den Empfindlichkeits-Wahlschalter für den Optischen Sensor auf "M" stellen.

| Schritt | Posten | Vorbereitungen für die Justierung | Zu justierende Teile | Justiermethode |
|---|---|---|---|---|
| 1 | Startposition | 1. Das Gehäuseoberteil öffnen und die Schallplatte auflegen.<br>2. Den Netzschalter einschalten.<br>3. Den Start-Schalter drücken. | Startposition-Justierschraube (Abb. 1) | 1. Die Startposition-Justierschraube drehen. Falls die Nadel im bespielten Teil aufsetzt, die Schraube entgegen dem Uhrzeigersinn drehen. |
| 2 | Taktgeber-Frequenz | 1. Den Emitter Q1 an Stift 14 von IC301 anschließen (Abb. 2).<br>2. Das Oszilloskop an Stift 13 von IC301 anschließen. | VR301 (Abb. 2) | 1. Den Netzschalter einschalten.<br>2. VR301 so justieren, daß der Zyklus der Ausgangswellenform 40$\mu$s ± 2$\mu$s beträgt (Abb. 3). |
| 3 | Sensor-Verstärkungs-grad | 1. Die Abdeckung entfernen und den Anschluß für die Abstimmung in den Anschluß CN901 einstecken. (Abb. 4)<br>2. Das Oszilloskop an Stift 6 (+) und Stift 1 (—) anschließen.<br>3. Die Schallplatte für die Abstimmung (A-Seite) auflegen. | VR901 (Abb. 1) | 1. Den Netzschalter einschalten.<br>2. Der Tonarm ist in der Ruheposition. (Leerteil der Platte)<br>3. VR901 so justieren, daß die Ausgangsspannung 4V ± 0,4V beträgt. |
| 4 | Sensor-Auflösung | 1. Die Abdeckung entfernen und den Anschluß für die Abstimmung in den Anschluß CN901 einstecken. (Abb. 4)<br>2. Das Oszilloskop an Stift 7 (+) und Stift 1 (—) anschließen.<br>3. Die Schallplatte für die Abstimmung (A-Seite) auflegen. | VR902 (Abb. 1) | 1. Den Netzschalter einschalten.<br>2. Die Programmtaste drücken, damit der Tonarm mit der Suche beginnt. (Zwischen den Musikstücken wird eine Ausgangsleistung gespeist.)<br>3. VR902 so justieren, daß die Spitze der Ausgangsleistung zwischen zwei Musikstücken 3V ± 0,3V beträgt. (Abb. 5) |
| 5 | Nadel-Absenkposition | 1. Das Gehäuseoberteil öffnen und den Gehäuseschalter in der gedrückten Stellung mit Klebeband fixieren.<br>2. Die Schallplatte für die Abstimmung (B-Seite) auflegen.<br>3. Das Gehäuseoberteil schließen.<br>4. Den Plattenspieler an den Verstärker anschließen. (Die Lautsprecher an die Lautsprecher-Anschlüsse anschließen.) | VR302 (Abb. 6) | 1. Den Netzschalter einschalten.<br>2. Die Programmtaste 2 und anschließend den Start-Schalter drücken.<br>3. Nach erfolgtem Absenken der Nadel die Programmtaste 2 drücken, um das Stück zu überspringen.<br>4. Überprüfen, ob die Nadel bei der Position "18 — 19" abgesenkt wird.<br>5. VR302 so justieren, daß die Nadel bei Position "18 — 19" abgesenkt wird. |
| 6 | Tonarmwinkel | 1. Das Gehäuseoberteil öffnen und den Gehäuseschalter in der gedrücken Stellung mit Klebeband fixieren.<br>2. Das Gehäuseoberteil schließen. | Justierschraube (Abb. 7) | 1. Den Netzschalter einschalten und den Start-Schalter drücken, um den Tonarm nach innen zu bewegen.<br>2. Das Gehäuseoberteil öffnen.<br>3. Die Justierschraube so drehen, daß die Mittellinie des Tonarm mit der V-Kerbe der Liftstange übereinstimmt. |
| 7 | Servo-Verstärkung und Offset-Spannung | 1. Das Gehäuseoberteil öffnen und den Gehäuseschalter in der gedrückten Stellung mit Klebeband fixieren.<br>2. Das Gehäuseoberteil schließen.<br>3. Das Gleichstrom-Voltmeter an CN301, Anschluß 5 und den Erdungsanschluß (Masse) anschließen.<br>4. Die Sensor-Abdeckung entfernen (Abb. 8). | VR501 (Servoverstärkung) Schraube (Offset-Spannung) (Abb. 7, 8) | 1. Den Netzschalten einschalten und den Start-Schalter drücken, um den Tonarm nach innen zu bewegen.<br>2. Das Gehäuseoberteil öffnen.<br>3. Den Tonarm vollständig nach links bewegen. Anschließend VR501 so justieren, daß die Spannung 3,6V beträgt. (Servo-Verstärkung)<br>4. Den Tonarm in die Mitte stellen und überprüfen, daß die Ausgangsspannung 1,8V beträgt.<br>5. Falls die Spannung nicht 1,8V beträgt, ist die Schraube so zu drehen, bis die Ausgangsspannung 1,8V beträgt. (Offset-Spannung) |



## ■ MESURAGES ET RÉGLAGES — Français

- **Appareillage utilise et condition de l'appareil**

1. Oscilloscope (deux canaux).
2. Voltmètre à C.C.
3. Disque (SFTR007) pour la mise au point.
4. Connecteur (SZZP1010F) pour l'ajustement.
5. Régler le sélecteur de sensibilité du détecteur optique sur "M".

| Etape | Article | Préparatifs pour le réglage | Partie à régler | Méthode de réglage |
|---|---|---|---|---|
| 1 | Position de démarrage | 1. Ouvrir le boîtier supérieur et placer le disque.<br>2. Mettre en circuit le commutateur d'alimentation.<br>3. Appuyer sur le commutateur "Start" (démarrage). | Vis de réglage du positionnement de démarrage. (Fig. 1) | 1. Tourner la vis de réglage du positionnement de démarrage.<br>2. Si elle s'abaisse entre les plages musicales, tourner la vis dans le sens inverse des aiguilles d'une montre. |
| 2 | Fréq. des impulsions de rythme | 1. Raccorder l'émetteur Q1 à la broche à 14 pôles IC301.<br>2. Raccorder l'oscilloscope à la broche à 13 pôles IC301. | VR301 (Fig. 2) | 1. Mettre en circuit le commutateur d'alimentation.<br>2. Ajuster VR301 de telle sorte que le cycle de la forme d'onde de sortie soit de 40$\mu$s ± 2$\mu$s. (Fig. 3) |
| 3 | Gain du dispositif détecteur | 1. Retirer le couvercle et insérer le connecteur pour le réglage dans la borne CN901. (Fig. 4)<br>2. Raccorder l'oscilloscope à la broche hexapolaire (+) et à la broche unipolaire (—).<br>3. Placer le disque pour la mise au point avec la face A vers le haut. | VR901 (Fig. 1) | 1. Mettre en circuit le commutateur d'alimentation.<br>2. Le bras de lecture est sur la position d'intermission. (Zone vierge du disque)<br>3. Ajuster VR901 de telle sorte que la tension de sortie soit de 4V ± 0,4V. |
| 4 | Résolution du dispositif détecteur | 1. Retirer le couvercle et insérer le connecteur pour le réglage dans la borne CN901. (Fig. 4)<br>2. Raccorder l'oscilloscope à la broche heptapolaire (+) et à la broche unipolaire (—).<br>3. Placer le disque pour la mise au point avec la face A vers le haut. | VR902 (Fig. 1) | 1. Mettre en circuit le commutateur d'alimentation.<br>2. Appuyer sur la touche de programmation pour la laisser rechercher le bras de lecture. (La puissance de sortie est livrée entre les plages musicales.)<br>3. Ajuster VR902 de telle sorte que la puissance de sortie de crête entre les plages musicales soit de 3V ± 0,3V. (Fig. 5) |
| 5 | Position de repérage/pose de la pointe de lecture | 1. Ouvrir le boîtier supérieur et maintenir le commutateur du boîtier avec une bande adhésive.<br>2. Placer le disque pour la mise au point avec la face B vers le haut.<br>3. Refermer le boîtier supérieur.<br>4. Raccorder l'appareil à l'amplificateur. (Raccorder les haut-parleurs aux bornes des haut-parleurs.) | VR302 (Fig. 6) | 1. Mettre en circuit le commutateur d'alimentation.<br>2. Appuyer à la suite sur la touche de programmation 2, puis sur la touche de mise en route.<br>3. Après l'achèvement du repérage/pose, appuyer sur la touche de programmation 2 en vue du saut d'espacement.<br>4. S'assurer que la position descendante est au compte de "18 — 19".<br>5. Régler VR302 de telle sorte que la position descendante soit au compte de "18 — 19". |
| 6 | Angle de décalage du bras de lecture | 1. Ouvrir le boîtier supérieur et maintenir le commutateur de boîtier avec une bande adhésive.<br>2. Refermer le boîtier supérieur. | Vis de réglage (Fig. 7) | 1. Mettre en circuit le commutateur d'alimentation et appuyer sur le commutateur de démarrage pour déplacer le bras de lecture vers l'intérieur.<br>2. Ouvrir le boîtier supérieur.<br>3. Tourner la vis de réglage de telle sorte que le centre du bras coïncide avec la rainure en V de la tige d'élèvation. |
| 7 | Amplif. Servo-mécanique et tension de suppression | 1. Ouvrir le boîtier supérieur et maintenir le commutateur du boîtier avec une bande adhésive.<br>2. Refermer le boîtier supérieur.<br>3. Raccorder le voltmètre à C.C. à la borne CN301 et à la borne de mise à la terre.<br>4. Retirer la coiffe du dispositif détecteur. (Fig. 8) | VR501 — (Amplif. Servo-mécanique) Vis — (tension de suppression) (Figs. 8, 9) | 1. Mettre en circuit le commutateur d'alimentation et appuyer sur le commutateur de démarrage pour déplacer le bras de lecture vers l'intérieur.<br>2. Ouvrir le boîtier supérieur.<br>3. Déplacer complètement le bras de lecture vers la gauche. Puis, ajuster VR501 de telle sorte que la tension soit de 3,6V. (Amplification servo-mécanique)<br>4. Placer le bras de lecture au centre et s'assurer que la tension de sortie soit de 1,8V.<br>5. Si la tension n'est pas de 1,8V, ajuster la vis de telle sorte que la tension de sortie soit de 1,8V. (Tension de suppression) |

## ■ MEDICIONES Y AJUSTE — Español

- **Equipo usado y condición del aparato.**

1. Osciloscopio (dos canales)
2. Voltímetro de CC.
3. Disco (SFTR007) para ajuste.
4. Conector (SZZP1010F) para ajuste.
5. Poner el selector de sensibilidad de sensor óptico en "M".

| Paso | Artículo | Preparaciones para ajuste | Porción de ajuste | Método de ajuste |
|---|---|---|---|---|
| 1 | Posición de arranque | 1. Abrir el gabinete superior y colocar el disco.<br>2. Encender el interruptor de corriente.<br>3. Apretar el interruptor de "Arranque". | Tornillo de ajuste de posición de arranque. (Fig. 1) | 1. Girar el tornillo de ajuste de posición de arranque.<br>Si desciende entre tonadas, girar el tornillo a la izquierda. |
| 2 | Frecuencia de reloj | 1. Conector emisor Q1 a perno-14 IC301. (Fig. 2)<br>2. Conectar el osciloscopio a perno-13 IC301. | VR301 (Fig. 2) | 1. Encender el interruptor de corriente.<br>2. Ajustar VR301 de manera que el ciclo de forma de onda de salida sea 40$\mu$s ± 2$\mu$s. (Fig. 3) |
| 3 | Ganancia de sensor | 1. Remover la cubierta e insertar el conector para ajuste en terminal CN901. (Fig. 4)<br>2. Conectar el osciloscopio a perno-6 (+) y perno-1 (—).<br>3. Colocar el disco para ajuste con el lado A arriba. | VR901 (Fig. 1) | 1. Encender el interruptor de corriente.<br>2. El brazo fonocaptor está en la posición de descanso. (Area negra del disco.)<br>3. Ajustar VR901 de manera que el voltaje de salida sea 4V ± 0,4V. |
| 4 | Resulución de sensor | 1. Remover la cubierta e insertar el conector para ajuste en terminal CN901 (Fig. 4).<br>2. Conectar el osciloscopio a perno-7 (+) y perno-1 (—).<br>3. Colocar el disco para ajuste con el lado A arriba. | VR902 (Fig. 1) | 1. Encender el interruptor de corriente.<br>2. Apretar la tecla de programa para permitirla explorar el brazo fonocaptor. (Salida es suministrada entre las tonadas.)<br>3. Ajustar VR902 de manera que la salida de cresta entre tonadas sea 3V ± 0,3V. (Fig. 5). |
| 5 | Posición de apunte-descendente (cue-down) de aguja | 1. Abrir el gabinete superior y sujetar el interruptor de gabinete con cinta.<br>2. Colocar el disco para ajuste con el lado B arriba.<br>3. Cerrar el gabinete superior.<br>4. Conectar la unidad al amplificador (Conectar los altavoces a los terminales de altavoces.) | VR302 (Fig. 6) | 1. Encender el interruptor de corriente.<br>2. Apretar la tecla de programa 2, seguido por el interruptor de arranque.<br>3. Después de completar el apunte-descendente (cueing-down), apretar la tecla de programa 2 para el fin de salto de surco.<br>4. Asegurarse de que la posición descendente esté en conteo "18 — 19".<br>5. Ajustar VR302 de manera que la posición descendente esté en conteo "18 — 19". |
| 6 | Angulo de descentramiento de brazo de fonocaptor | 1. Abrir el gabinete superior y sujetar el interruptor de gabinete con cinta.<br>2. Cerrar el gabinete superior. | Tornillo de ajuste (Fig. 7) | 1. Encender el interruptor de corriente y apretar el interruptor de arranque para mover el brazo de fonocaptor hacia dentro.<br>2. Abrir el gabinete superior.<br>3. Girar el tornillo de ajuste de manera que el centro de brazo coincida con la ranura-V de la barra de alza. |
| 7 | Servoganancia y contravoltaje | 1. Abrir el gabinete superior y sujetar el interruptor de gabinete con cinta.<br>2. Cerrar el gabinete superior.<br>3. Conectar el voltímetro de CC a terminal 5 de CN301 y terminal de tierra.<br>4. Remover la cubierta de sensor (Fig. 8). | VR501 (Servoganancia) Tornillo (Contravoltaje) (Fig. 8, 9) | 1. Encender el interruptor de corriente y apretar el interruptor de arranque para mover el brazo de fonocaptor hacia dentro.<br>2. Abrir el gabinete superior.<br>3. Mover completamente el brazo de fonocaptor a la izquierda. Luego, ajustar VR501 de manera que el voltaje sea 3,6V. (Servoganancia)<br>4. Fijar el brazo de fonocaptor en el centro y asegurarse de que el voltaje de salida sea 1,8V.<br>5. Si el voltaje no es 1,8V, ajustar el tornillo de manera que el voltaje de salida se 1,8V. (Contravoltaje) |



# CHANGES

## ■ REPLACEMENT PARTS LIST

**Notes:**

1. Mentioned in this parts list are only those changed in Model No. SL-Q6 for destination [M] area.
2. Important safety notice:
   Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
3. The "Ⓢ" mark is service standard parts and may differ from production parts.
4. Ⓚ-marked parts are used for black only, while ○-marked parts are for silver type only.
5. Parts other than Ⓚ-and ○-marked are used for both black and silver types.
6. This replacement parts list contains the main parts changed from those of former types. For the detailed replacement parts list, refer to pages 15, 16

**Areas**

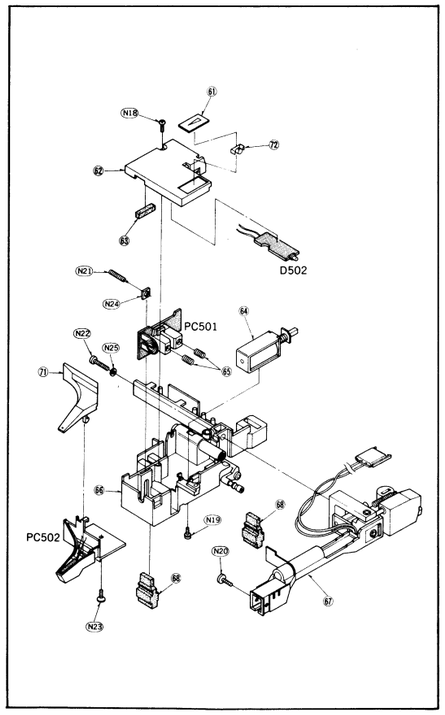
* [E] is available in Switzerland and Scandinavia.
* [EK] is available in United Kingdom.
* [XL] is available in Australia.
* [EG] is available in F.R. Germany.
* [EB] is available in Belgium.
* [EH] is available in Holland.
* [EF] is available in France.
* [Ei] is available in Italy.
* [EC] is available in Czechoslovakia.
* [XA] is available in Southeast Asia, Oceania, Africa, Middle Near East and Central South America.
* [XM] is available in Central South America.
* [PA] is available in far East PX.
* [PE] is available in European Military.
* [PC] is available in European Audio Club.

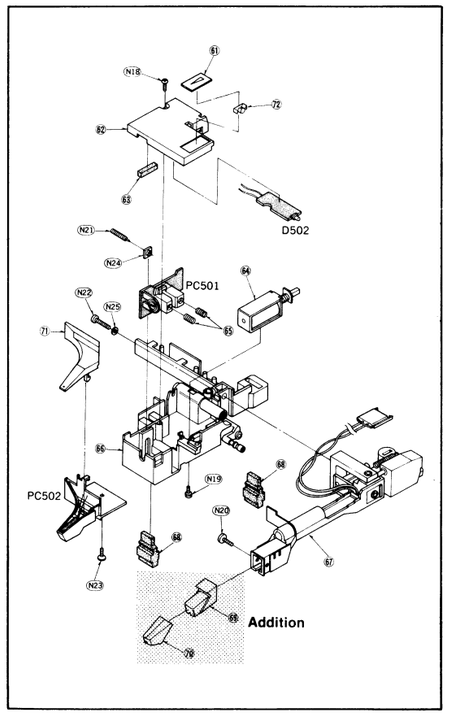
**Black type model No. : SL-Q6 (K)**

| Ref. No. | Change of Part No. SL-Q6 [M] ➡ SL-Q6 / (K) | | Part Name & Description | Per Set (Pcs.) | Remarks |
|---|---|---|---|---|---|
| **SWITCH** | | | | | |
| S901 | Addition | SFDSHXW225—2 [EK, XA, XM, PA, PE and PC areas] | Voltage Selector | 1 | ⚠ |
| **POWER TRANSFORMER** | | | | | |
| T1 | SLT48DTL3A | SLT57DT7E [EK, XA, XM, PA, PE and PC areas] | Power Source | 1 | ⚠ |
| | | SLT48DTE13E [XL] | Power Source | 1 | ⚠ |
| | | SLT48DT10E [Other areas] | Power Source | 1 | ⚠ |
| **FUSES** | | | | | |
| F1 | Addition | XBA2C02T1B [EK, XA, XM, PA, PE and PC areas] | 250V, T200mA | 1 | ⚠ |
| | | XBA2C05T1B [Other areas] | 250V, T500mA | 1 | ⚠ |
| F2 | Addition | XBA2C06T1B [EK, XA, XM, PA, PE and PC areas] | 250V, T630mA | 1 | ⚠ |
| **CABINET and CHASSIS PARTS** | | | | | |
| 1 | SFADQ06N01E | SFADQ06N01E ○ | Dust Cover (Silver) | 1 | |
| | | SFADQ06N21E Ⓚ | Dust Cover (Black) | 1 | |
| 3 | SFUMQ06N08 | SFUMQ06N08 ○ | Latch, Dust Cover (Silver) | 2 | |
| | | SFUMQ06N22 Ⓚ | Latch, Dust Cover (Black) | 2 | |
| 4 | SFUMD04N07 | SFUMD04N07 ○ | Latch, Dust Cover (Silver) | 2 | |
| | | SFUMC02N14 Ⓚ | Latch, Dust Cover (Black) | 2 | |
| 5 | SFGZQ06N01 | SFGZQ06N01 ○ | Rubber, Latch | 2 | |
| | | SFGZC02N01 Ⓚ | Rubber, Latch | 2 | |
| 15 | SJT345 | SJT347 [EK, XA, XM, PA, PE and PC areas] | Holder, Fuse | 4 | |
| | | SJT347 [Other areas] | Holder, Fuse | 2 | |
| 17 | SFUMQ06N10A | SFUMQ06N10A ○ | Front Panel (Silver) | 1 | |
| | | SFUMQ06N21A Ⓚ | Front Panel (Black) | 1 | |
| 19 | SFACQ06N01 | SFACQ06N01 ○ | Cabinet (Silver) | 1 | |
| | | SFACQ06N21 Ⓚ | Cabinet (Black) | 1 | |
| 20 | SFGCQ06N02 | SFGCQ06N02 [EK, XA, XM, PA, PE and PC areas] | Cushion Rubber, Power Transformer | 2 | |
| | | SFGCQ06N02 [Other areas] | Cushion Rubber, Power Transformer | 2 | |
| 21 | SFDJHSC0491 | SFDJHSC04912 [XA, XM] | Socket, AC Cord | 1 | ⚠ |
| | | SFDJHSC0491 [XL] | Socket, AC Cord | 1 | ⚠ |
| | | SFDJHSC0498 [Other areas] | Socket, AC Cord | 1 | ⚠ |
| 23 | SFNNQ06M01 | SFNNQ06S01 [E, EC] | Name Plate | 1 | |
| | | SFNNQ06G01 [EK] | Name Plate | 1 | |
| | | SFNNQ06X01 [XA, XM] | Name Plate | 1 | |
| | | SFNNQ06P01 [PA, PE] | Name Plate | 1 | |
| | | SFNNQ06P02 [PC] | Name Plate | 1 | |
| | | SFNNQ06R01 [Other areas] | Name Plate | 1 | |

| Ref. No. | Change of Part No. SL-Q6 [M] → SL-Q6 / (K) | | | Part Name & Description | Per Set (Pcs.) | Remarks |
|---|---|---|---|---|---|---|
| **TONEARM PARTS** | | | | | | |
| 69 | Addition | EPC–P28AK | [PA, PE, PC] | ★ Cartridge | 1 | |
| | | EPC–P33AK | [Other areas] | ★ Cartridge | 1 | |
| 70 | Addition | EPS–28ES | [PA, PE, PC] | ★ Stylus | 1 | |
| | | EPS–33ES | [Other areas] | ★ Stylus | 1 | |
| **ACCESSORIES** | | | | | | |
| A1 | SFNUQ06M01 | SFNUQ06I01 | [Ei] | Instruction Book | 1 | |
| | | SFNUQ06G01 | [EK] | Instruction Book | 1 | |
| | | SFNUQ06X01 | [XL, XA, XM] | Instruction Book | 1 | |
| | | SFNUQ06R01 | [EG] | Instruction Book | 1 | |
| | | SFNUQ06F01 | [EF] | Instruction Book | 1 | |
| | | SFNUQ06P01 | [PA, PE, PC] | Instruction Book | 1 | |
| | | SFNUQ06S01 | [Other areas] | Instruction Book | 1 | |
| A4 | SFDAC05M01 | SFDAC05G02 | [EK] | AC Cord | 1 | ⚠ |
| | | SFDAC05L01 | [XL] | AC Cord | 1 | ⚠ |
| | | SFDAC05X02 | [XA, XM] | AC Cord | 1 | ⚠ |
| | | SFDAC05N01 | [PA, PE, PC] | AC Cord | 1 | ⚠ |
| | | SFDAC05E02 | [Other areas] | AC Cord | 1 | ⚠ |
| A5 | Addition | SFDKI11918 | [XA, XM] | 2 Pin Plug | 1 | ⚠ |
| A6 | Addition | QJP0603S | [PA, PE, PE] | Adaptor, Gimens | 1 | ⚠ |
| **PACKING PARTS** | | | | | | |
| P1 | SFHPQ06M01 | SFHPQ06C01 | [EF] ○ | Carton Box (Silver) | 1 | |
| | | SFHPQ06M01 | [Other areas] ○ | Carton Box (Silver) | 1 | |
| | | SFHPQ06C21 | [EF] Ⓚ | Carton Box (Black) | 1 | |
| | | SFHPQ06M21 | [Other areas] Ⓚ | Carton Box (Black) | 1 | |

## ■ EXPLODED VIEW



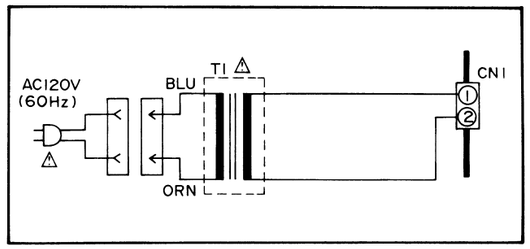





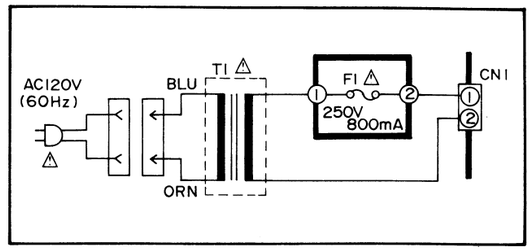

## ■ SCHEMATIC DIAGRAM

• **Power source circuit**

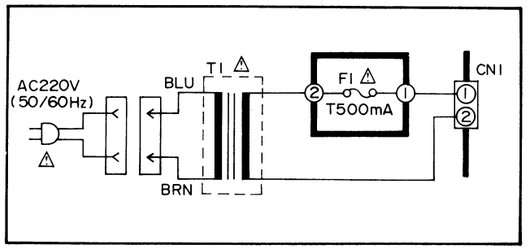
※ **Product for U.S.A.**



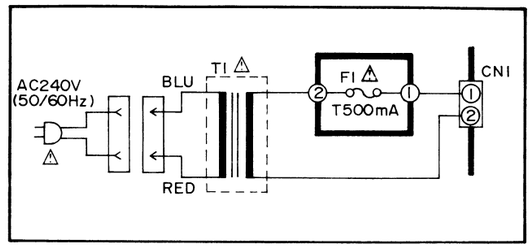

※ **Product for Canada.**



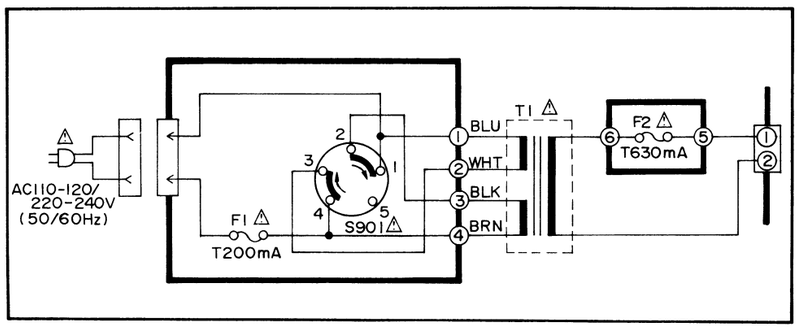

※ **Product for continental Europe**




※ **Product for Australia.**




※ **Product for United Kingdom, Southeast Asia, Oceania, Africa, Middle Near East and Central South America.**



| Per Set (Pcs.) | Remarks |
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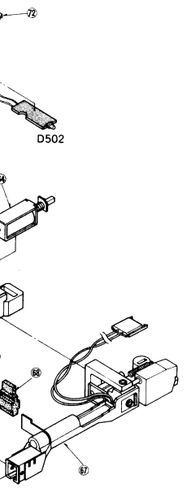


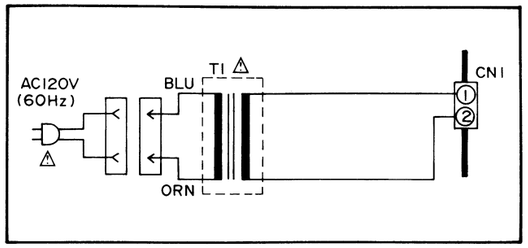

Addition



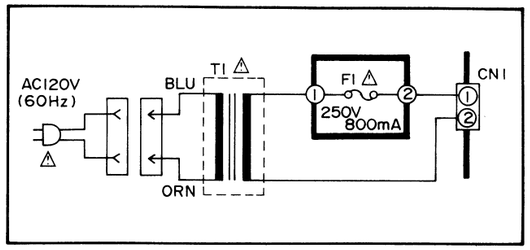
## ■ SCHEMATIC DIAGRAM

- Power source circuit

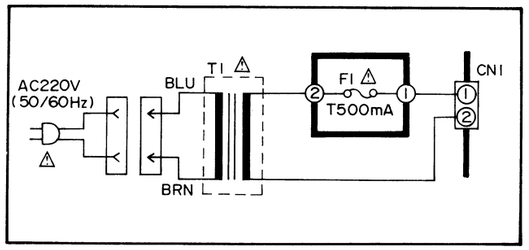
※ Product for U.S.A.



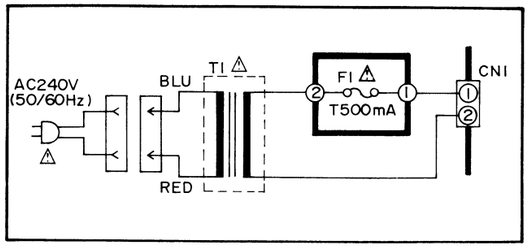

※ Product for Canada.



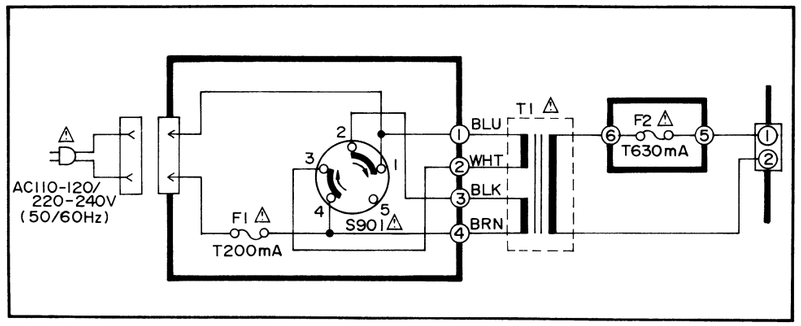

※ Product for continental Europe




※ Product for Australia.




※ Product for United Kingdom, Southeast Asia, Oceania, Africa, Middle Near East and Central South America.

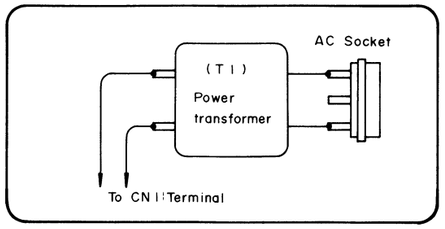




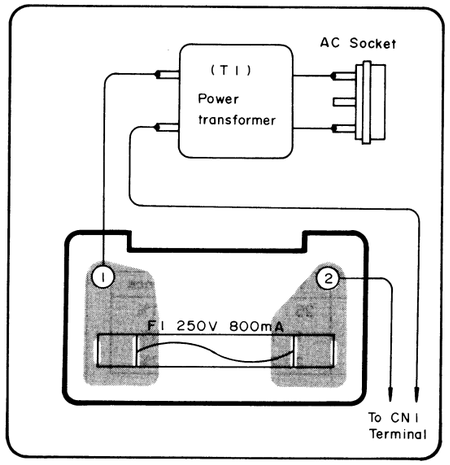

## ■ PRINTED CIRCUIT BOARD

- Power source circuit

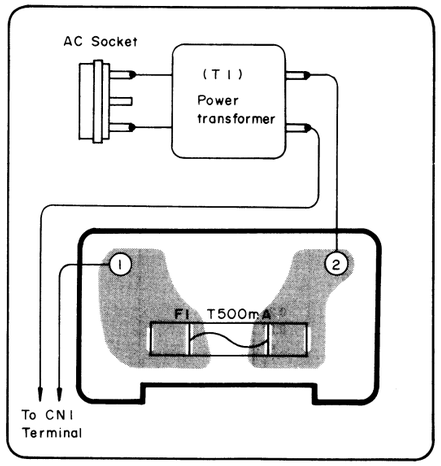
※ Product for U.S.A.



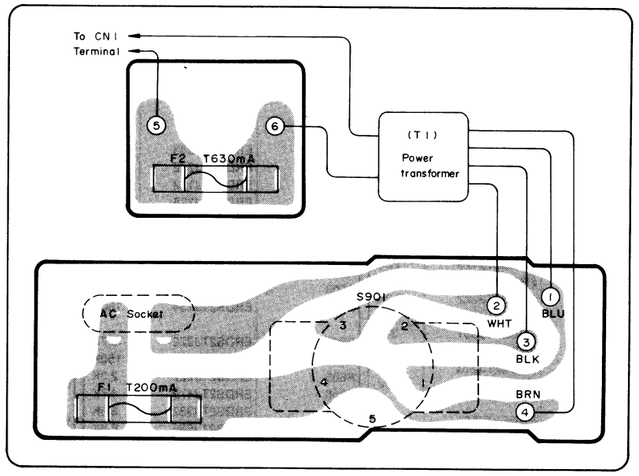

※ Product for Canada.




※ Product for Continental Europe and Australia.




※ Product for United Kingdom, Southeast Asia, Oceania, Africa, Middle Near East and Central South America.



# ■ RESISTORS AND CAPACITORS

**Notes:** 1. Part numbers are indicated on most mechanical parts. Please use this part number for parts orders.
2. Important safety notice: Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.
3. This "Ⓢ" mark is service standard parts and may differ from production parts.
4. Unless otherwise specified. All resistors are in OHMS (Ω) K = 1000Ω, M = 1000kΩ All capacitors are in MICROFARADS(μF), P = $10^{-6}$μF.

### Numbering System of Resistor

Example

| ERD | 25 | F | J | 101 |
|---|---|---|---|---|
| Type | Wattage | Shape | Tolerance | Value |

| ERG | 1 | AN | J | 2R2 |
|---|---|---|---|---|
| Type | Wattage | Shape | Tolerance | Value |

### Numbering System of Capacitor

Example

| ECKD | 1H | 102 | Z | F |
|---|---|---|---|---|
| Type | Voltage | Value | Tolerance | Peculiarity |

| ECEA | 50 | M | R47 | R |
|---|---|---|---|---|
| Type | Voltage | Peculiarity use | Value | Special use |

| Resistor Type | Wattage | Tolerance |
|---|---|---|
| ERD : Carbon | 25 : 1/4W | F : ±1% |
| ERG : Metal Oxide | 1 : 1W | J : ±5% |
| ERX : Metal Film | 2 : 2W | G : ±2% |

ERD2FCG□□□ ⟶ Fuse type carbon (1/4W)
ERD10TLJ□□□ ⟶ Chip type carbon (1/8W)
ECUV1H□□□ ⟶ Chip type ceramic capacitor
ERDS2TJ□□□ ⟶ Small type carbon (1/4W)

| Capacitor Type | Voltage | | Tolerance |
|---|---|---|---|
| | ECEA Type | Others | |
| ECEA : Electrolytic | 1A : 10V | 1H : 50V DC | J : ±5% |
| ECKD : Ceramic | 1C : 16V | 2H : 500V DC | K : ±10% |
| ECQM : Polyester | 1E : 25V | 1 : 100V | Z : +80%, −20% |
| ECCD : Ceramic | 1V : 35V | AL : 125V AC | P : +100%, −0% |
| ECKF : Ceramic | 1H : 50V | MY : 125V AC | M : ±20% |
| ECEB : Electrolytic | 1J : 63V | | |
| | 50 : 50V | | |

| Ref. No. | Part No. | Value |
|---|---|---|
| **RESISTORS** | | |
| RF1 ⚠ | ERD2FCG180 | 18 |
| R1 | ERDS2TJ101 | 100 |
| R2 | ERDS2TJ221 | 220 |
| R3 | ERG2SJ330 | 33 |
| R4 | ERDS2TJ221 | 220 |
| R103 | ERD10TLJ104 | 100K |
| R104 | ERX1ANJ2R7 | 2.7 |
| R105 | ERD10TLJ270 | 27 |
| R201 | ERD10TLJ393 | 39K |
| R202 | ERD10TLJ394 | 390K |
| R203 | ERD10TLJ680 | 68 |
| R204 | ERD10TLJ151 | 150 |
| R205 | ERD10TLJ223 | 22K |
| R207 | ERD10TLJ102 | 1K |
| R208 | ERD10TLJ680 | 68 |
| R320 | ERDS2TJ333 | 33K |
| R321 | ERDS2TJ471 | 470 |
| R322 | ERDS2TJ102 | 1K |
| R323 | ERDS2TJ333 | 33K |
| R324 | ERDS2TJ222 | 2.2K |
| R325 | ERDS2TJ103 | 10K |
| R326 | ERDS2TJ472 | 4.7K |
| R327 | ERDS2TJ223 | 22K |
| R328 | ERDS2TJ103 | 10K |
| R329 | ERDS2TJ222 | 2.2K |
| R331 | ERDS2TJ102 | 1K |
| R334,335 | ERDS2TJ331 | 330 |
| R336 | ERDS2TJ103 | 10K |
| R337 | ERDS2TJ223 | 22K |
| R338 | ERDS2TJ272 | 2.7K |
| R339 | ERDS2TJ561 | 560 |
| R340 | ERDS2TJ681 | 680 |
| R341 | ERDS2TJ563 | 56K |
| R342 | ERDS2TJ471 | 470 |
| R343 | ERDS2TJ103 | 10K |
| R345 | ERDS2TJ472 | 4.7K |
| R346 | ERDS2TJ333 | 33K |
| R347 | ERDS2TJ563 | 56K |
| R348 | ERDS2TJ333 | 33K |
| R351 | ERDS2TJ471 | 470 |
| R352 | ERDS2TJ472 | 4.7K |
| R353 | ERDS2TJ222 | 2.2K |
| R357 | ERDS2TJ223 | 22K |
| R358 | ERDS2TJ333 | 33K |
| R359 | ERDS2TJ471 | 470 |
| R360 | ERDS2TJ683 | 68K |
| R401 | ERDS2TJ683 | 68K |
| R402 | ERDS2TJ222 | 2.2K |
| R403 | ERDS2TJ102 | 1K |
| R404 | ERDS2TJ224 | 220K |
| R405 | ERDS2TJ683 | 68K |
| R406 | ERDS2TJ222 | 2.2K |
| R407 | ERDS2TJ102 | 1K |
| R408 | ERDS2TJ224 | 220K |
| R409 | ERDS2TJ273 | 27K |
| R410 | ERDS2TJ103 | 10K |
| R501 Ⓢ | ERD25FJ271 | 270 |
| R502 Ⓢ | ERD25FJ391 | 390 |
| R503 Ⓢ | ERD25FJ561 | 560 |
| R801 | ERDS2TJ154 | 150K |
| R802 | ERDS2TJ272 | 2.7K |
| R803 | ERDS2TJ154 | 150K |
| R805 | ERDS2TJ222 | 2.2K |
| R806 | ERDS2TJ472 | 4.7K |
| R807 | ERDS2TJ332 | 3.3K |
| R808 | ERDS2TJ682 | 6.8K |
| R809 | ERDS2TJ102 | 1K |
| R810 | ERDS2TJ103 | 10K |
| R811 | ERDS2TJ684 | 680K |
| R812 | ERDS2TJ223 | 22K |
| R813 | ERDS2TJ104 | 100K |
| R814 | ERDS2TJ684 | 680K |
| R815 | ERDS2TJ224 | 220K |
| R816 | ERDS2TJ221 | 220 |
| R817 | ERDS2TJ104 | 100K |
| R818 | ERDS2TJ102 | 1K |
| R819 | ERDS2TJ470 | 47 |
| R820 | ERDS2TJ222 | 2.2K |
| R821 | ERDS2TJ272 | 2.7K |
| R822 | ERDS2TJ220 | 22 |
| R823 | ERDS2TJ103 | 10K |
| R824 | ERDS2TJ472 | 4.7K |
| R825 | ERDS2TJ103 | 10K |
| R826 | ERDS2TJ332 | 3.3K |
| R827 | ERDS2TJ101 | 100 |
| R828 | ERDS2TJ394 | 390K |
| R829,830 | ERDS2TJ333 | 33K |
| R831 | ERDS2TJ222 | 2.2K |
| **CAPACITORS** | | |
| C1.2 ⚠ | ECQM1223KZ | 0.022 |
| C3 ⚠ | ECQM1223KZ | 0.022 |
| C4 Ⓢ | ECEB1EU222 | 2200 |
| C5 Ⓢ | ECEAICU330 | 33 |
| C101 Ⓢ | ECEA1CU330 | 33 |
| C102 Ⓢ | ECEA50ZR22 | 0.22 |
| C103 | ECQV05274JZ | 0.27 |
| C105,106 ⚠ | ECEA1CN470S | 47 |
| C107 Ⓢ | ECEA50Z1 | 1 |
| C201 Ⓢ | ECEA0JU470 | 47 |
| C202 Ⓢ | ECEA50ZR22 | 0.22 |
| C203 Ⓢ | ECQM1H683JZ | 0.068 |
| C204 | ECUV1H121JCM | 120P |
| C205 | ECUV1H330JCM | 33P |
| C206 | ECUV1H101JCM | 100P |
| C207 Ⓢ | ECEA0JU470 | 47 |
| C208 Ⓢ | ECEAIAU470 | 47 |
| C301 | ECCD1H221K | 220P |
| C302 Ⓢ | ECQM1H104JZ | 0.1 |
| C303 | ECFR1H104ZF | 0.1 |
| C304 Ⓢ | ECEA0JU330 | 33 |
| C305 Ⓢ | ECEA1CU221 | 220 |
| C306 Ⓢ | ECEA1HU4R7 | 4.7 |
| C307 | ECFR1H104ZF | 0.1 |
| C309 | ECFR1H104ZF | 0.1 |
| C401,402 Ⓢ | ECQM1H223JZ | 0.022 |
| C403 | ECQM1H224JZ | 0.22 |
| C601 | ECFB1B104ZM | 0.1 |
| C701 Ⓢ | ECEA1CU101 | 100 |
| C801 Ⓢ | ECQM1H103JZ | 0.01 |
| C802,803 Ⓢ | ECQM1H104JZ | 0.1 |
| C804 Ⓢ | ECEA1CU220 | 22 |
| C805 Ⓢ | ECEA1CU470 | 47 |
| C806 Ⓢ | ECEA50M1R | 1 |



# ■ REPLACEMENT PARTS LIST

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5. The parenthesized numbers in the columns of description stand for the quantity per set.
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7. Parts other than Ⓚ - and ○-marked are used for both black and silver types.

**Areas**

* [E] is available in Switzerland and Scandinavia.
* [EK] is available in United Kingdom.
* [XL] is available in Australia.
* [EG] is available in F.R. Germany.
* [EB] is available in Belgium.
* [EH] is available in Holland.
* [EF] is available in France.
* [Ei] is available in Italy.
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* [PA] is available in far East PX.
* [PE] is available in European Military.
* [PC] is available in European Audio Club.

**Black type model No. : SL-Q6 (K)**

| Ref. No. | Part No. | Description |
|---|---|---|
| **INTEGRATED CIRCUITS** | | |
| IC1 | SVIUPC7812H | Regulator |
| IC101 | AN6637 | Turntable Drive |
| IC201 | AN6683 | Turntable Control |
| IC301 | MN1425FPJ | Micro Computer |
| IC401 | AN6552F | Tonearm Motor Control |
| IC801 | AN6562 | Blank Groov Detection |
| IC802 | AN6912 | Comparator |
| **TRANSISTORS** | | |
| Q1 Ⓢ | 2SC1383Q | Regulator |
| Q301,302 | 2SD636 | Swithsing,Muting Drive |
| Q303,304 | 2SD636 | Cueing Control |
| Q305 | 2SB641 | Offset Angle Detection |
| Q306 | 2SD636 | Offset Angle Detection |
| Q307,308,309 | 2SB641 | Switching, Weaveform Sharping |
| Q312 | 2SD636 | Swtching |
| Q401,402 Ⓢ | 2SD973S | Tonearm Motor Control |
| Q403,404 | 2SD638 | Tonearm Motor Control |
| Q801 | 2SB641 | Switching |
| Q802 | 2SD636 | Switching |
| Q803 | 2SB641 | Switching |
| **DIODES** | | |
| D1 ⚠Ⓢ | SVDS1RBA20Z | Rectifier |
| D2 | MA4056 | 5.6V Zener |
| D301～308 | SVDZQ06NO2 | Program/Repeat |
| 311 | | Indicator |
| D312～317 | MA165 | Switching |
| D319 | MA4075 | 7.5V Zener |
| D320 | SVDZQ06NO2 | Cueing Up Indicator |
| D321 | SVDZQ06NO3 | Cueing Down Indicator |
| D322,323 | MA165 | Switching |
| D501 Ⓢ | MA162A | Switching |
| D502 | SVDEBR3432S | Tonearm Potition Indicator |
| D701 | MA165 | Switching |
| D801,802 | MA165 | Switching |
| D803 | MA4047 | 4.7V Zener |
| D804 | MA165 | Switching |
| D806 | MA4075 | 7.5V Zener |
| **HALL ELEMENTS** | | |
| H101,102 | OH-002 | Turntable Position Detection |
| **CRYSTAL** | | |
| X201 | SVQSH41TR | 4.193MHz |
| **SWITCHES** | | |
| SI ⚠ | SFDSC02N02 | Power(On/Off) |
| S301～312 | EVQQS405K | Program,Cueing Repeat,Start and STop |
| S315 | SFDSHSW0699 | Speed Selector |
| S601 | SFDSC02N03 | Rest Switch |
| S701 | SFDSC05N01 | Reset |
| S801,802 | SFDSHSW0699 | Sensor Sensitivity |
| S901 (EK,XA,XM PA,PE,PC Only) ⚠ | SFDSHXW225-2 | Voltage Selector |
| **PHOTO INTERRUPTERS** | | |
| PC501 | ON1186 | Offset Angle Detection |
| PC502 | ON2168 | Blank Groov Detection |
| PC601 | ON1161 | Tonearm Position Detection |
| **VARIABLE RESISTORS** | | |
| VR301 | EVN61AA00B54 | Clock Frequency Adjustment 50KΩ(B) |
| VR302 | EVJEDAF20B54 | Cueing Down Positon Adjustment 50KΩ(B) |
| VR501 Ⓢ | EVNMOAA00B53 | Servo Gain Adjustment 5KΩ(B) |
| VR901,902 | EVN58AA00B15 | Sensor Resolotion 100KΩ(B) |

| Ref. No. | Part No. | Description |
|---|---|---|
| **RELAY** | | |
| RL701 | SFDYQ11N02 | Muting |
| **POWER TRANSFORMER** | | |
| T1 (EK,PA,PE,PC XA,XM) ⚠ | SLT57DT7E | Power Source |
| T1 (XL) ⚠ | SLT48DTE13E | Power Source |
| T1 (Other Areas) ⚠ | SLT48DT10E | Power Sourse |
| **FUSES** | | |
| F1 (EK,XA,XM PA,PE,PC) ⚠ | XBA2C02T1B | 250V,T200mA |
| F1 (Other Areas) ⚠ | XBA2C05TIB | 250V,T500mA |
| F2 (EK,XA,XM PA,PE,PC Only) ⚠ | XBA2CO6T1B | 250V,T630mA |
| **CONPONENT COMBINATIONS** | | |
| Z301,302 | EXBT44471K | 470Ω×4 |
| Z303 | EXBP84333K | 33KΩ×4 |
| Z304 | EXBP84103K | 10KΩ×4 |
| Z305 | EXBP84332K | 3.3KΩ×4 |
| Z306 | EXBP86122J | 1.2KΩ×6 |

| Ref. No. | Part No. |
|---|---|
| **CABINET AND CHASSIS P** | |
| 1 ○ | SFADQ06N01E |
| 1 Ⓚ | SFADQ06N21E |
| 2 | SFKKQ06N03 |
| 3 ○ | SFUMQ06N08 |
| 3 Ⓚ | SFUMQ06N22 |
| 4 ○ | SFUMD04N07 |
| 4 Ⓚ | SFUMC02N14 |
| 5 ○ | SFGZQ06N01 |
| 5 Ⓚ | SFGZC02N01 |
| 6 | SFGZD04N01 |
| 7 | SFTGQ06N01 |
| 8 | SFWEC06N01 |
| 9 | SFQAC06N01 |
| 10 | SFTEQ05N01 |
| 11 | SFTMC07-01E |
| 12 | SFQCC05N01 |
| 13 | SFGAC05N02 |
| 14 | SFAUQ06N01 |
| 15 (EK,PA, PE,PC, XA,XM) | SJT347 |
| 15 (Other Areas) | SJT347 |
| 16 | SFUMQ06N05 |
| 17 ○ | SFUMQ06N10A |
| 17 Ⓚ | SFUMQ06N21A |
| 17-1 | SFKKQ06N02 |
| 17-2 | SFKKQ06N01 |
| 17-3 | SFUZQ06N02 |
| 17-4 | SFUZQ06N03 |
| 18 | SFKTC06N04 |
| 19 ○ | SFACQ06N01 |
| 19 Ⓚ | SFACQ06N21 |
| 20 (EK,PA, PE,PC, XA,XM) | SFGCQ06X01 |
| 20 (Other Areas) | SFGCQ06N02 |
| 21 (XA,XM) ⚠ | SFDJHSC04912 |
| 21 (XL) ⚠ | SFDJHSC0491 |
| 21 (Other Areas) ⚠ | SFDJHSC0498 |
| 22 | SFATQ06N01E |
| 23 (E,EC) | SFNNQ06S01 |
| 23 (EK) | SFNNQ06G01 |
| 23 (XA,XM) | SFNNQ06X01 |
| 23 (PA,PE) | SFNNQ06P01 |
| 23 (PC) | SFNNQ06P02 |
| 23 (Other Areas) | SFNNQ06R01 |
| 24 | SFGKQ06N01 |
| 25 | SFUML11R03 |
| 26 | SFUZC05N02E |
| 27 | SFUMV05N23 |
| 28 | SFUMC05N22 |
| 29 | SFGBC10-01 |

# ■ REPLACEMENT PARTS LIST

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* [PA] is available in far East PX.
* [PE] is available in European Military.
* [PC] is available in European Audio Club.

**Black type model No. : SL-Q6 (K)**

Ω, M = 1000kΩ
μF), P = $10^{-6}$ μF.

| | Tolerance |
|---|---|
| | J : ±5% |
| | K : ±10% |
| | Z : +80%, −20% |
| | P : +100%, −0% |
| | M : ±20% |

| | Part No. | Value |
|---|---|---|
| | ECUV1H330JCM | 33P |
| | ECUV1H101JCM | 100P |
Ⓢ | ECEA0JU470 | 47
Ⓢ | ECEAIAU470 | 47
| | ECCD1H221K | 220P |
Ⓢ | ECQM1H104JZ | 0.1
| | ECFR1H104ZF | 0.1
Ⓢ | ECEA0JU330 | 33
Ⓢ | ECEA1CU221 | 220
Ⓢ | ECEA1HU4R7 | 4.7
| | ECFR1H104ZF | 0.1
| | ECFR1H104ZF | 0.1
Ⓢ | ECQM1H223JZ | 0.022
| | ECQM1H224JZ | 0.22
| | ECFB1B104ZM | 0.1
Ⓢ | ECEA1CU101 | 100
Ⓢ | ECQM1H103JZ | 0.01
Ⓢ | ECQM1H104JZ | 0.1
Ⓢ | ECEA1CU220 | 22
Ⓢ | ECEA1CU470 | 47
Ⓢ | ECEA50M1R | 1

| Ref. No. | Part No. | Description |
|---|---|---|
| **INTEGRATED CIRCUITS** | | |
| IC1 | SVIUPC7812H | Regulator |
| IC101 | AN6637 | Turntable Drive |
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| **TRANSISTORS** | | |
| Q1 Ⓢ | 2SC1383Q | Regulator |
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| Q303,304 | 2SD636 | Cueing Control |
| Q305 | 2SB641 | Offset Angle Detection |
| Q306 | 2SD636 | Offset Angle Detection |
| Q307,308,309 | 2SB641 | Switching, Weaveform Sharping |
| Q312 | 2SD636 | Swtching |
| Q401,402 Ⓢ | 2SD973S | Tonearm Motor Control |
| Q403,404 | 2SD638 | Tonearm Motor Control |
| Q801 | 2SB641 | Switching |
| Q802 | 2SD636 | Switching |
| Q803 | 2SB641 | Switching |
| **DIODES** | | |
| D1 ⚠Ⓢ | SVDS1RBA20Z | Rectifier |
| D2 | MA4056 | 5.6V Zener |
| D301～308 | SVDZQ06NO2 | Program/Repeat |
| 311 | | Indicator |
| D312～317 | MA165 | Switching |
| D319 | MA4075 | 7.5V Zener |
| D320 | SVDZQ06NO2 | Cueing Up Indicator |
| D321 | SVDZQ06NO3 | Cueing Down Indicator |
| D322,323 | MA165 | Switching |
| D501 Ⓢ | MA162A | Switching |

| Ref. No. | Part No. | Description |
|---|---|---|
| D502 | SVDEBR3432S | Tonearm Potition Indicator |
| D701 | MA165 | Switching |
| D801,802 | MA165 | Switching |
| D803 | MA4047 | 4.7V Zener |
| D804 | MA165 | Switching |
| D806 | MA4075 | 7.5V Zener |
| **HALL ELEMENTS** | | |
| H101,102 | OH-002 | Turntable Position Detection |
| **CRYSTAL** | | |
| X201 | SVQSH41TR | 4.193MHz |
| **SWITCHES** | | |
| SI ⚠ | SFDSC02N02 | Power(On/Off) |
| S301～312 | EVQQS405K | Program,Cueing Repeat,Start and STop |
| S315 | SFDSHSW0699 | Speed Selector |
| S601 | SFDSC02N03 | Rest Switch |
| S701 | SFDSC05N01 | Reset |
| S801,802 | SFDSHSW0699 | Sensor Sensitivity |
| S901 [EK,XA,XM PA,PE,PC Only] ⚠ | SFDSHXW225-2 | Voltage Selector |
| **PHOTO INTERRUPTERS** | | |
| PC501 | ON1186 | Offset Angle Detection |
| PC502 | ON2168 | Blank Groov Detection |
| PC601 | ON1161 | Tonearm Position Detection |
| **VARIABLE RESISTORS** | | |
| VR301 | EVN61AA00B54 | Clock Frequency Adjustment 50KΩ(B) |
| VR302 | EVJEDAF20B54 | Cueing Down Positon Adjustment 50KΩ(B) |
| VR501 Ⓢ | EVNMOAA00B53 | Servo Gain Adjustment 5KΩ(B) |
| VR901,902 | EVN58AA00B15 | Sensor Resolotion 100KΩ(B) |

| Ref. No. | Part No. | Description |
|---|---|---|
| **RELAY** | | |
| RL701 | SFDYQ11N02 | Muting |
| **POWER TRANSFORMER** | | |
| T1 [EK,PA,PE,PC XA,XM] ⚠ | SLT57DT7E | Power Source |
| T1 [XL] ⚠ | SLT48DTE13E | Power Source |
| T1 [Other Areas] ⚠ | SLT48DT10E | Power Sourse |
| **FUSES** | | |
| F1 [EK,XA,XM PA,PE,PC] ⚠ | XBA2C02T1B | 250V,T200mA |
| F1 [Other Areas] ⚠ | XBA2C05TIB | 250V,T500mA |
| F2 [EK,XA,XM PA,PE,PC Only] ⚠ | XBA2CO6T1B | 250V,T630mA |
| **CONPONENT COMBINATIONS** | | |
| Z301,302 | EXBT44471K | 470Ω×4 |
| Z303 | EXBP84333K | 33KΩ×4 |
| Z304 | EXBP84103K | 10KΩ×4 |
| Z305 | EXBP84332K | 3.3KΩ×4 |
| Z306 | EXBP86122J | 1.2KΩ×6 |

| Ref. No. | Part No. | Description |
|---|---|---|
| **CABINET AND CHASSIS PARTS** | | |
| 1 ○ | SFADQ06N01E | Dust Cover (1) |
| 1 Ⓚ | SFADQ06N21E | Dust Cover (1) |
| 2 | SFKKQ06N03 | Record Groove Scale Plate (1) |
| 3 ○ | SFUMQ06N08 | Latch,Dust Cover (2) |
| 3 Ⓚ | SFUMQ06N22 | Latch,Dust Cover (2) |
| 4 ○ | SFUMD04N07 | Latch,Dust Cover (2) |
| 4 Ⓚ | SFUMC02N14 | Latch,Dust Cover (2) |
| 5 ○ | SFGZQ06N01 | Rubber,Latch (2) |
| 5 Ⓚ | SFGZC02N01 | Rubber,Latch (2) |
| 6 | SFGZD04N01 | Cushion Rubber, Dust Cover (2) |
| 7 | SFTGQ06N01 | Turntable Mat (1) |
| 8 | SFWEC06N01 | 45 r.p.m.Adaptor (1) |
| 9 | SFQAC06N01 | Spring,45r.p.m.Adaptor (1) |
| 10 | SFTEQ05N01 | Turntable Platter (1) |
| 11 | SFTMC07-01E | Rotate Magnet, Turntable Platter (1) |
| 12 | SFQCC05N01 | Spring,Insulator (4) |
| 13 | SFGAC05N02 | Insulator (4) |
| 14 | SFAUQ06N01 | Bottom Board (1) |
| 15 [EK,PA, PE,PC, XA,XM] | SJT347 | Holder,Fuses (4) |
| 15 [Other Areas] | SJT347 | Holder,Fuses (2) |
| 16 | SFUMQ06N05 | Holder,L.E.D (3) |
| 17 ○ | SFUMQ06N10A | Front Panel (1) |
| 17 Ⓚ | SFUMQ06N21A | Front Panel (1) |
| 17-1 | SFKKQ06N02 | Surface Plate (1) |
| 17-2 | SFKKQ06N01 | Badge (1) |
| 17-3 | SFUZQ06N02 | SheetA),L.E.D (1) |
| 17-4 | SFUZQ06N03 | SheetB),L.E.D (1) |
| 18 | SFKTC06N04 | Knob,On/Off Switch (1) |
| 19 ○ | SFACQ06N01 | Cabinet (1) |
| 19 Ⓚ | SFACQ06N21 | Cabinet (1) |
| 20 [EK,PA, PE,PC, XA,XM] | SFGCQ06X01 | Cushion Rubber, Power Transformer (2) |
| 20 [Other Areas] | SFGCQ06N02 | Cushion Rubber, Power Transformer (2) |
| 21 [XA,XM] ⚠ | SFDJHSC04912 | Socket,A.C.Cord (1) |
| 21 [XL] ⚠ | SFDJHSC0491 | Socket,A.C.Cord (1) |
| 21 [Other Areas] ⚠ | SFDJHSC0498 | Socket,A.C.Cord (1) |
| 22 | SFATQ06N01E | Hinge (2) |
| 23 [E,EC] | SFNNQ06S01 | Name Plate (1) |
| 23 [EK] | SFNNQ06G01 | Name Plate (1) |
| 23 [XA,XM] | SFNNQ06X01 | Name Plate (1) |
| 23 [PA,PE] | SFNNQ06P01 | Name Plate (1) |
| 23 [PC] | SFNNQ06P02 | Name Plate (1) |
| 23 [Other Areas] | SFNNQ06R01 | Name Plate (1) |
| 24 | SFGKQ06N01 | Rubber Cap (1) |
| 25 | SFUML11R03 | Wheel,Tonearm Drive (1) |
| 26 | SFUZC05N02E | Rope Ass'y, Tonearm Drive (1) |
| 27 | SFUMV05N23 | Cap,Pulley (1) |
| 28 | SFUMC05N22 | Pulley (1) |
| 29 | SFGBC10-01 | Belt,Tonearm Drive Motor (1) |

| Ref. No. | Part No. | Description |
|---|---|---|
| 30 | SFMHC02N02R | Motor Ass'y, Tonearm Drive (1) |
| 31 | SFUZC02N01 | Rrd,Tonearm Drive (1) |
| 32 | SFQHQ34N22 | Spring,Rest Switch Lever (1) |
| 33 | SFUMC02N05 | Lever,Rest Switch (1) |
| 34 | SFUMC02N06 | Base,Rest Switch (1) |
| 35 | SFUMQ06N09 | Holder,Rest Switch (1) |
| 36 | SFUMQ06N06A | Worm Gear Ass'y (1) |
| 37 | SFUPBL3N11E | Base,Tonearm Drive Motor (1) |
| 38 | SFACQ05N13 | Cover,Lead Wires (1) |
| 39 | SFKTQ06N02 | Knob,Cueing Down Position (1) |
| 40 | SFQPC05N01 | Spring,Reset Switch (1) |
| 41 | SFUMC02N10 | Rope Guide (1) |
| 42 | SFUMQ06N07 | Clamper,Guide Rail (1) |
| 43 | SFGCQ06N01 | Cushion Rubber, Guide Rail (1) |
| 44 | SFGCC05N05 | Cushion Rubber, Guide Rail (1) |
| 45 | SFUMC02N12 | Holder,Lead Wires (1) |
| 46 | SFXJQ06N01 | Guide Rail, Tonearm Drive (1) |
| 47 | SFUKQ06N01E | Base Ass'y,Tonearm (1) |
| 48 | SFKTQ06N01 | Knob, Size/Sensor/Speed (3) |
| 50 | SFMZC06N01R | Stator Frame Ass'y (1) |
| 51 | SFMGQ34N01 | Cover,Stator Coil (1) |
| 52 | SFQA913-01 | Spring,Adjustment Screw |
| 53 | SFACQ05N11 | Cover,Adjustment (1) |
| 54 | SFDJD04N02 | Circuit Board (1) Jack,Synchro Recording |
| 55 | SFUMC05N15 | Holder,Reset Switch (1) |
| 56 | SFDJQ06N02 | Jack,Phono Output (1) |
| 57 | SFGCQ06N03 | Rubber,Dust Cover (2) |
| 58 | SFGZBL3N02 | Spacer (1) |
| **TONEARM PARTS** | | |
| 61 | SFPAK0Q601 | Indicator Plate (1) |
| 62 | SFPCS0Q601 | Indicator Cover (1) |
| 63 | SFPGM0Q601 | Rubber,L.E.D. Circuit Board (1) |
| 64 | SFDZC05N01E | Solenoid Ass'y (1) |
| 65 | SFPSP00302 | Spring,Adjustment (1) |
| 66 | SFPKD00301R | Base,Tonearm (1) |
| 67 | SFPAM0Q601A | Tonearm Ass'y (1) |
| 68 | SFPGML1101 | Cushion Rubber (2) |
| 69 [PA,PE, PC] | EPC-P28AK | ★Cartridge (1) |
| 69 [Other Areas] | EPC-P33AK | ★Cartridge (1) |
| 70 [PA,PE, PC] | EPS-28ES | ★Stylus (1) |
| 70 [Other Areas] | EPS-33ES | ★Stylus (1) |
| 71 | SFPAB0Q602 | Cover,Sensor Case (1) |
| 72 | SFPCS00502 | Light Concentrator (1) |
| **SCREWS,WASHERS AND NUTS** | | |
| N1 Ⓢ | XTV3+8BFN | Screw,⊕3×8 (17) |
| N2 Ⓢ | XTV3+6BFN | Screw,⊕3×6 (4) |
| N3 Ⓢ | XTV3+8BFN | Screw,⊕3×8 (4) |
| N4 | XTW3+14QFYR | Screw,⊕3×14 (4) |
| N5 Ⓢ | XSN3+5S | Screw,⊕3×5 (3) |
| N6 Ⓢ | XTV3+6BFZ | Screw,⊕3×6 (2) |
| N7 | XTWS3+14TFZ | Screw,⊕3×14 (2) |
| N9 | XTN16+10G | Screw,⊕16×10 (1) |
| N10 | XSN3+30S | Screw,⊕3×30 (1) |
| N11 | SFXGB33N01 | Screw (2) |
| N12 | CSTW3 | Washer,φ3 (2) |
| N13 Ⓢ | XWE3A8BW | Washer,φ3 (2) |
| N14 Ⓢ | XWE3E10 | Washer,φ3 (1) |
| N15 | SFXWC06N02 | Washer (1) |
| N17 | XNC3HS | Nut,φ3 (1) |
| N18 | XTN23+6JFZ | Screw,⊕2·3×6 (1) |
| N19 | XYN2+C4FZ | Screw,⊕2×4 (1) |

| Ref. No. | Part No. | Description |
|---|---|---|
| N20 | SFPEV0Q601 | Screw,Cartridge (1) |
| N21 | SFPTN00301 | Screw (1) |
| N22 Ⓢ | XSN3+12S | Screw,⊕3×12 (1) |
| N23 | XTN26+6JFZ | Screw,⊕2·6×6 (1) |
| N24 | SFXN623-1 | Nut (1) |
| N25 | XWA3B | Washer,φ3 (1) |
| N26 | XTV3+20J | Screw,⊕3×20 (1) |
| **ACCESSORIES** | | |
| A1 [EI] | SFNUQ06I01 | Instruction Book (1) |
| A1 [EK] | SFNUQ06G01 | Instruction Book (1) |
| A1 [XL,XA, XM] | SFNUQ06×01 | Instruction Book (1) |
| A1 [EG] | SFNUQ06R01 | Instruction Book (1) |
| A1 [EF] | SFNUQ06F01 | Instruction Book (1) |
| A1 [PA,PE, PC] | SFNUQ06P01 | Instruction Book (1) |
| A1 [Other Areas] | SFNUQ06S01 | Instruction Book (1) |
| A2 | SFDHC05N01 | Phono Output Cord (1) |
| A3 | SFDLC05N01 | Ground Wire (1) |
| A4 [EK] ⚠ | SFDAC05G02 | A.C.Cord (1) |
| A4 [XL] ⚠ | SFDAC05L01 | A.C.Cord (1) |
| A4 [XA,XM] ⚠ | SFDAC05X02 | A.C.Cord (1) |
| A4 [PA,PE, PC] ⚠ | SFDAC05N01 | A.C.Cord (1) |
| A4 [Other Areas] ⚠ | SFDAC05E02 | A.C.Cord (1) |
| A5 [XA,XM Only] ⚠ | SFDKI19118 | 2Pin Plug (1) |
| A6 [PA,PE, PC Only] ⚠ | QJP0603S | Adaptor (1) |
| **PACKING PARTS** | | |
| P1 [EF] ○ | SFHPQ06C01 | Carton Box (1) |
| P1 [Other Areas] ○ | SFHPQ06M01 | Carton Box (1) |
| P1 [EF] Ⓚ | SFHPQ06C21 | Carton Box (1) |
| P1 [Other Areas] Ⓚ | SFHPQ06M21 | Carton Box (1) |
| P2 | SFHHC05N01 | Pad,Front (1) |
| P3 | SFHHC05N02 | Pad,Rear (1) |
| P4 | SFHKC05N01 | Clamper,Turntable (1) |
| P5 | SFHKQ06N01 | Spacer,Tonearm (1) |
| P6 | SFHSC06N01 | Spacer,Dust Cover (1) |
| P7 | SFYH45×50 | Polyethylene Bag,Unit (1) |
| P8 | SFYH17×16 | Polyethylene Bag, Accessories (1) |
| P9 | SFHDQ06N01 | Pad,Turntable Mat (1) |
| P10 | SFYF33B35 | Polyethylene Bag, Turntable Mat (1) |
| P11 | SFHDC06S01 | Sheet (1) |



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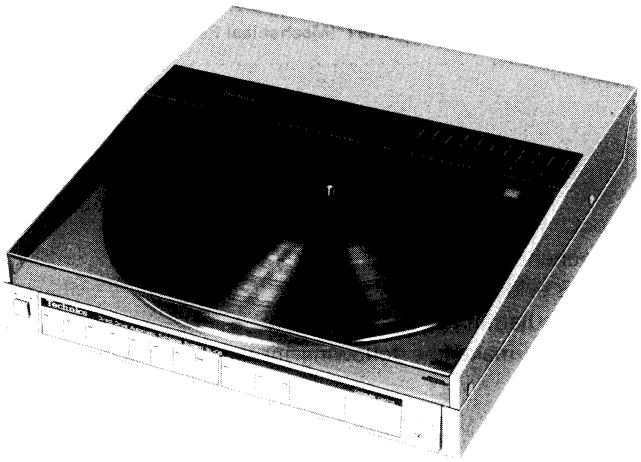
# Service Manual

## Quartz Direct Drive Automatic Turntable System

# SL-Q6

[M], [MC]



T4P is the standard mark for the "P-mount" plug-in-connector system. Products carrying this mark are inter-changeable and compatible with each other.

**Areas**

*[M] is available in U.S.A.
*[MC] is available in Canada.

***The cartridge shown here is an option.**

## Specifications

Specifications are subject to change without notice for further improvement.
Weight and dimensions shown are approximate.

### ■ General

| | |
|---|---|
| **Power supply:** | 120 V AC, 60 Hz |
| **Power consumption:** | 12 W |
| **Dimensions:** (W×H×D) | 31.5 × 8.8 × 31.5 cm (12-1/2" × 3-1/2" × 12-1/2") 31.5 × 39 × 31.5 cm (12-1/2" × 15-23/64" × 12-1/2") (Maximum height when dust cover is open.) |
| **Weight:** | 4.3 kg (9.5 lb.) |

### ■ Turntable section

| | |
|---|---|
| **Type:** | Direct drive<br>Fully automatic turntable |
| **Features:** | Auto start/Auto lead-in<br>Auto return<br>Auto Stop<br>Programmable band selection<br>Repeat play<br>Auto speed select<br>Manual speed selection possible<br>Auto size select<br>Record presence detection |
| **Drive method:** | Direct drive |
| **Motor:** | Brushless DC motor |
| **Drive control method:** | Quartz-phase-locked control |
| **Turntable platter:** | Aluminum die-cast<br>Diameter 30 cm (12") |
| **Turntable speeds:** | 33-1/3 rpm and 45 rpm<br>Auto speed select<br>(Manual selection possible) |
| **Wow and flutter:** | 0.012% WRMS*<br>0.025% WRMS (JIS C5521)<br>±0.035% peak<br>(IEC 98A Weighted) |

* Measured by obtaining signal from built-in frequency generator of motor assembly.

| | |
|---|---|
| **Rumble:** | −56 dB (IEC 98A Unweighted)<br>−78 dB (IEC 98A Weighted) |

### ■ Tonearm section

| | |
|---|---|
| **Type:** | Dynamic balanced type<br>Linear tracking tonearm<br>4-pivot gimbal suspension |
| **Effective length:** | 10.5 cm (4-1/8") |
| **Tracking error angle:** | Within ±0.1° |
| **Effective mass:** | 9 g (including cartridge) |
| **Resonance frequency:** | 12 Hz |
| **Tonearm drive motor:** | DC motor |
| **Phono cable capacitance:** | 200 pF |

Technics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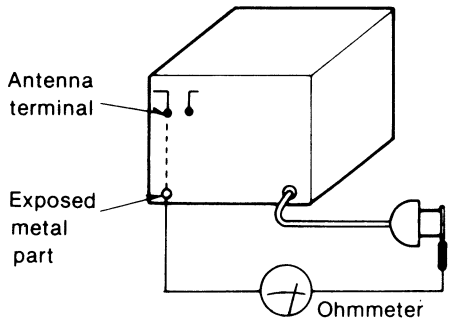
# ■ SAFETY PRECAUTION

1. Before servicing, unplug the power cord to prevent an electric shock.
2. When replacing parts, use only manufacturer's recommended components for safety.
3. Check the condition of the power cord. Replace if wear or damage is evident.
4. After servicing, be sure to restore the lead dress, insulation barriers, insulation papers, shields, etc.
5. Before returning the serviced equipment to the customer, be sure to make the following insulation resistance test to prevent the customer from being exposed to a shock hazard.

## • INSULATION RESISTANCE TEST

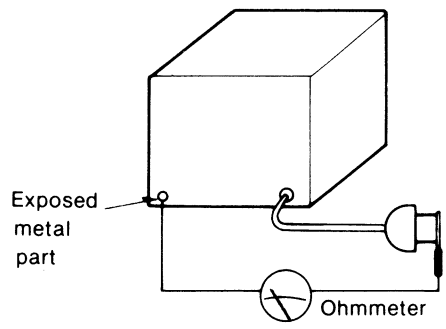
1. Unplug the power cord and short the two prongs of the plug with a jumper wire.
2. Turn on the power switch.
3. Measure the resistance value with ohmmeter between the jumpered AC plug and each exposed metal cabinet part, such as screwheads antenna, control shafts, handle brackets, etc. Equipment with antenna terminals should read between 3MΩ and 5.2MΩ to all exposed parts. (Fig. A) Equipment without antenna terminals should read approximately infinity to all exposed parts. (Fig. B)

**Note:** Some exposed parts may be isolated from the chassis by design. These will read infinity.




(Fig. A)

Resistance = 3MΩ—5.2MΩ

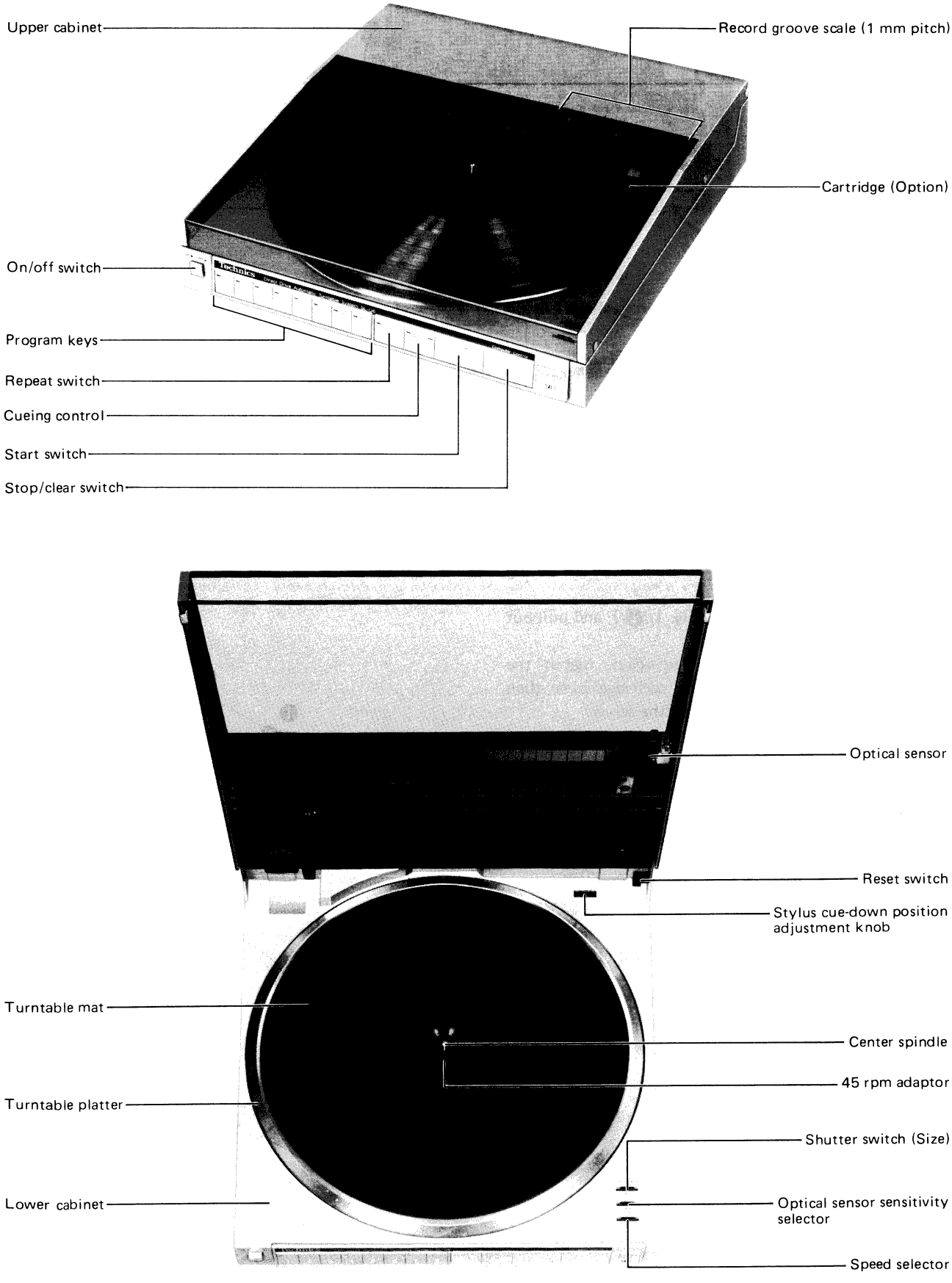


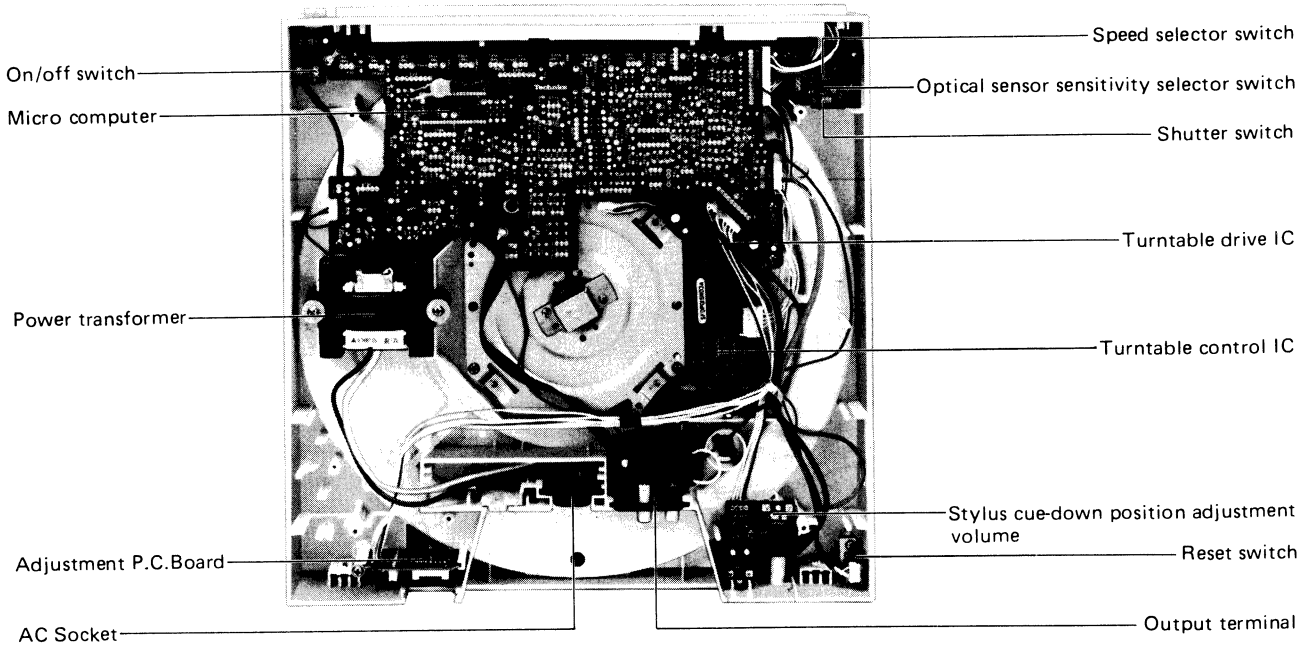

(Fig. B)

Resistance = Approx ∞

4. If the measurement is outside the specified limits, there is a possibility of a shock hazard. The equipment should be repaired and rechecked before it is returned to the customer.

## ■ LOCATION OF CONTROLS






# ■ DISASSEMBLY INSTRUCTIONS

## • How to remove the cartridge

1. Open the upper cabinet.
2. Down the tonearm by finger in order to make cueing down position.
3. Remove the cartridge setscrew (**Fig. 1:** ❶ ), and pull out the cartridge.

**Note:** When attaching the cartridge again, match the tonearm connector with the cartridge pins, then completely insert it and tighten the screw.

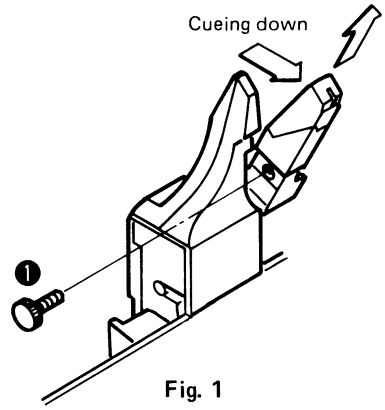



**Fig. 1**

## • How to remove the turntable platter

1. Open the upper cabinet.
2. Remove the turntable mat, and lift the turntable platter. (**Fig. 2**)

**Note:**

(1) When removing the turntable platter, it is not necessary to remove the 45 r.p.m. adaptor.

(2) The turntable platter is tight fitted on to the center spindle. When removing the turntable platter, take care not to give damage to the upper cabinet, arm motor cover and tonearm cover.

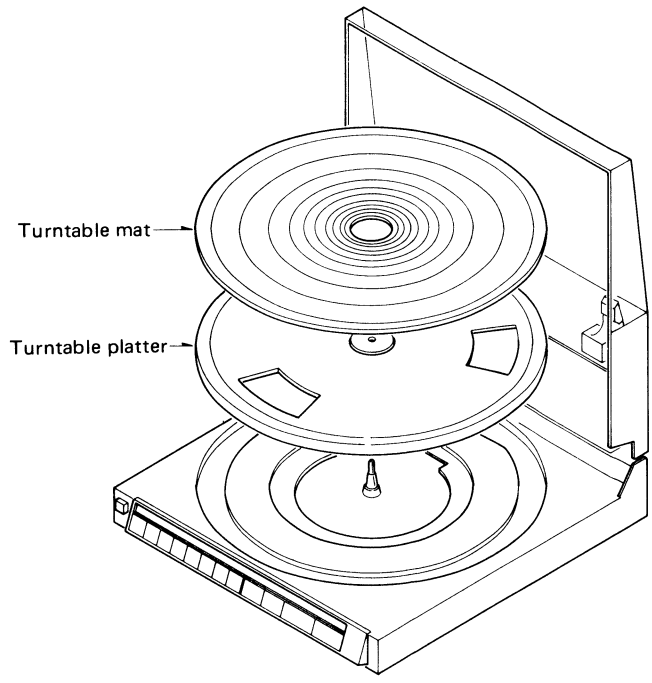



**Fig. 2**

## • How to remove the 45 r.p.m. adaptor (Fig. 3)

1. Remove the turntable platter. (**Refer to "How to remove the turntable platter".**)
2. Turn the 45 r.p.m. adaptor counter clockwise to raise it from the turntable platter surface.
3. Push the claw by the blade screwdriver in the direction of the arrow, then remove the 45 r.p.m. adaptor.

**Note:** When removing the 45 r.p.m. adaptor, remove the turntable platter, otherwise the 45 r.p.m. adaptor claws will be broken.

## • How to remove the bottom board

1. Remove the turntable platter. (**Refer to "How to remove the turntable platter".**)
2. Close the upper cabinet and turn over the unit on a soft cloth taking care not to damage the upper cabinet.
3. Remove the 4 bottom board setscrews. (**Fig. 4:** ❷ ~ ❺).

## • How to remove the switching circuit board

1. Remove the bottom board. (**Refer to "How to remove the bottom board".**)
2. Remove the 2 switching circuit board screws (**Fig. 5:** ❻, ❼).

## • How to remove the main circuit board

1. Remove the switching circuit board. (**Refer to "How to remove the switching circuit board".**)
2. Remove the connector CN306. (**Fig. 5**)
3. Remove the 6 main circuit board setscrews (**Fig. 5:** ❽ ~ ⓭), and lift the main circuit board in the direction of the arrow Ⓐ . (**Fig. 5**)

**Note:** When replacing the main circuit board, confirm D301, 302, 307 and 308 completely to be fitted by 2 L.E.D. holders. (**Fig. 6**)

## • How to remove the operation switch circuit board

1. Remove the main circuit board. (**Refer to "How to remove the main circuit board".**)
2. Loosen the 2 front panel setscrews (**Fig. 7:** ⓮, ⓯)
3. Release the 6 claws of front panel, and remove the front cover.
4. Release the 22 claws of front panel, then the operation switch circuit board can be removed.

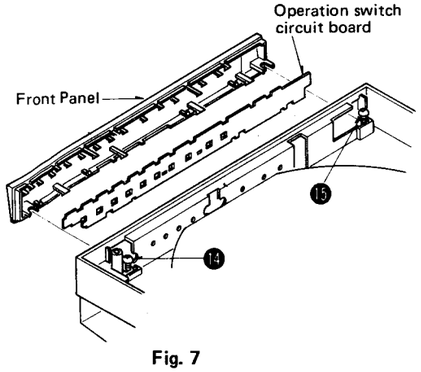



Fig. 7

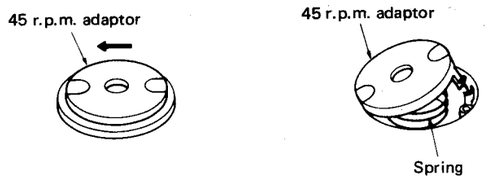



Fig. 3

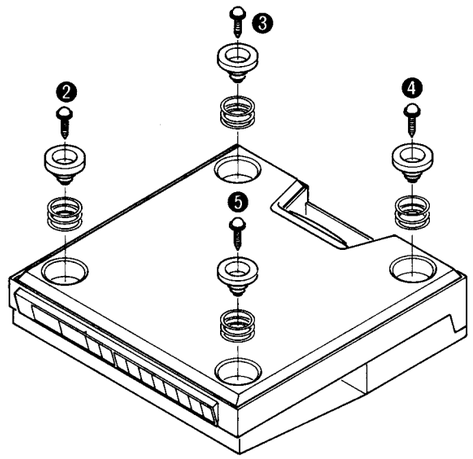



Fig. 4

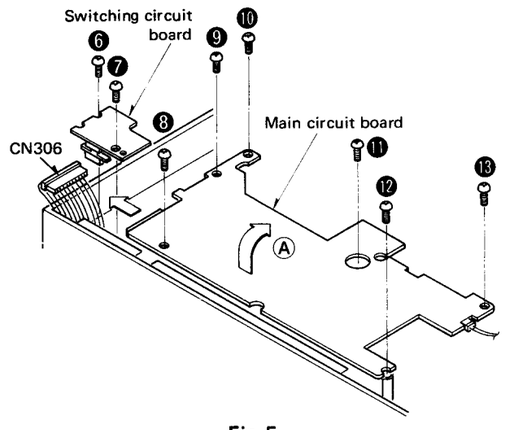



Fig. 5

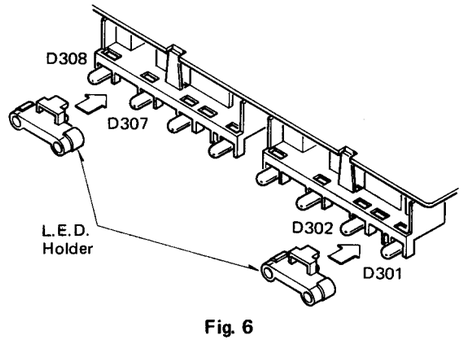



Fig. 6



## • How to remove the stator frame and drive circuit board

1. Remove the main circuit board. (**Refer to "How to remove the main circuit board."**)
2. Remove the 3 stator frame setscrews (**Fig. 8:** ⓰ ~ ⓲ ) and the 2 drive circuit board setscrews (**Fig. 8:** ⓳, ⓴ ).
3. Cut off the stopper by nippers and remove the 4 setscrews (**Fig. 9:** ㉑ ~ ㉔ ) to separate the stator frame and drive circuit board.

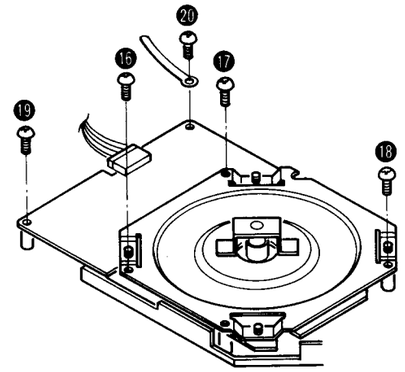



Fig. 8

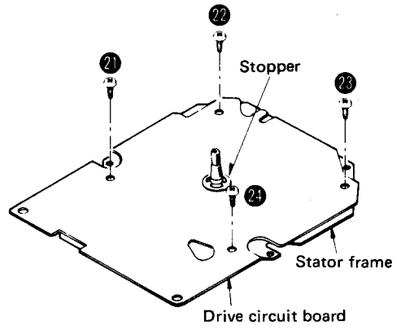



Fig. 9

## • How to remove the reset switch

1. Remove the bottom board. (**Refer to "How to remove the bottom board"**)
2. Remove the switch holder setscrew (**Fig. 10:** ㉕ ).
3. Release the 2 claws of switch holder and remove the reset switch circuit board.
4. Unsolder the 2 switch terminals, then the reset switch can be removed.

**Note:** When replacing the reset switch, be sure to open the upper cabinet.

## • How to remove the Hall element

1. Remove the turntable platter.
2. Remove the terminal solder by use of solder sucker.
3. Hold the Hall element with a tweezers and remove it while touching the soldering iron to the terminal. (**Fig. 11**)

## • How to remove the dust cover

1. Pull out the 4 right and left rivets and 2 right and left rivet holders. (**Fig. 12**)
2. Lift the dust cover in the direction of the arrow. (**Fig. 12**) Then the dust cover can be removed.

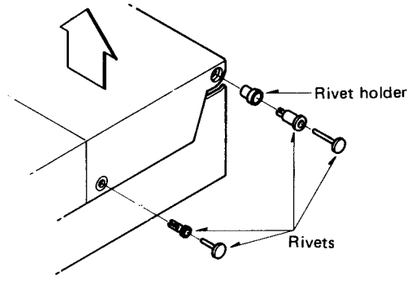



Fig. 12

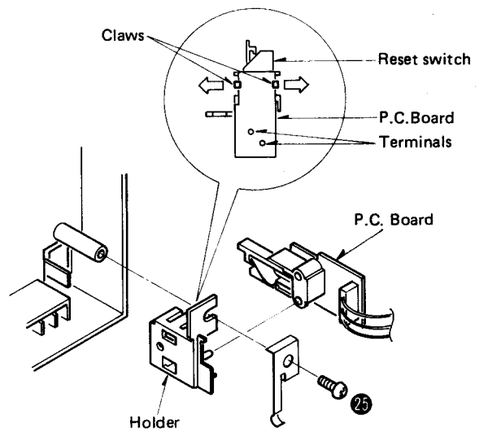



Fig. 10

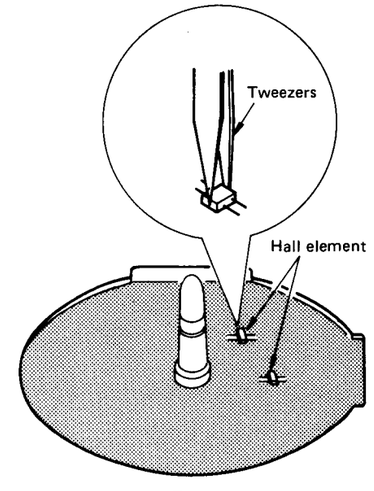



Fig. 11

### • How to remove the tonearm

1. Remove the bottom board. (**Refer to "How to remove the bottom board."**)
2. Remove the connector CN701. (**Fig. 13**)
3. Remove the P.C.B. setscrew (**Fig. 13:** ㉖ ), and pull out the lead wires cover in the direction of the arrow. (**Fig. 13**)
4. Remove the dust cover. (Refer to **"How to remove the dust cover."**)
5. Remove the lead wires holder. (**Fig. 14**)
6. Turn the worm gear by finger to move the tonearm center inward.
7. Remove the tonearm setscrew (**Fig. 15:** ㉗ ).
8. Remove the guide rail clamper, and pull out the guide rail, then remove the tonearm in the direction of the arrow Ⓐ . (**Fig. 15**)

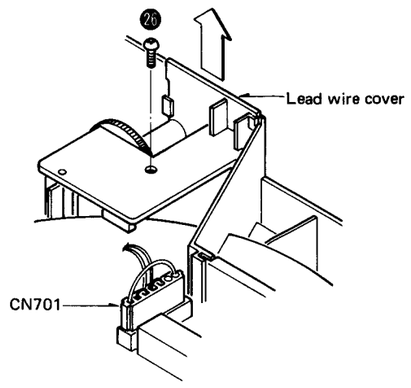



**Fig. 13**

### • How to remove the offset angle detection circuit board

1. Remove the dust cover. (**Refer to "How to remove the dust cover."**)
2. Remove the indicator cover setscrew (**Fig. 15:** ㉘ ) and the indicator cover in the direction of the arrow Ⓑ . (**Fig. 15**)
3. Remove the offset angle detection circuit board adjustment screw (**Fig. 15:** ㉙ ), then the offset angle detection circuit board can be removed.

**Note:** When replacing the offset angle detection circuit board, be sure to adjust the servo gain and offset voltage.

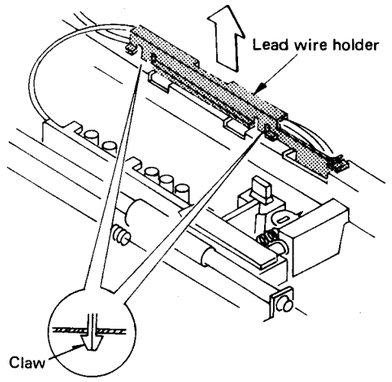



**Fig. 14**

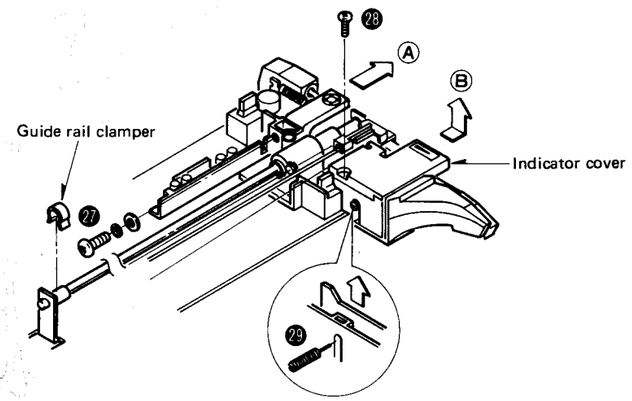



**Fig. 15**

## ■ MEASUREMENTS AND ADJUSTMENTS

### • Equipment used and condition of the set

1. Oscilloscope (two channels)
2. DC voltmeter.
3. Record (SFTR007) for adjustment.
4. Connector (SZZP1010F) for adjustment.
5. Set the optical sensor sensitivity selector to "M".

| Step | Item | Preparations for adjustment | Adjusting portion | Adjusting method |
|---|---|---|---|---|
| 1 | **Start position** | 1. Open the upper cabinet and put on the record.<br>2. Turn the power switch on.<br>3. Push the "Start" switch. | Start position adjusting screw. (Fig. 16) | 1. Turn the start position adjusting screw. If it descends between tunes, turn the screw counter clockwise. |
| 2 | **Clock frequency** | 1. Connect Q1 emitter to IC301 14-pin. (Fig. 17)<br>2. Connect the oscilloscope to IC301 13-pin. | VR301 (Fig. 17) | 1. Turn the power switch on.<br>2. Adjust VR301 so that the cycle of output waveform is 40μs ± 2μs (Fig. 18) |
| 3 | **Sensor gain** | 1. Remove the cover and insert the connector for adjustment into terminal CN901. (Fig. 19)<br>2. Connect the oscilloscope to 6-pin (+) and 1-pin (–).<br>3. Put on the record for adjustment with side A up. | VR901 (Fig. 16) | 1. Turn the power switch on.<br>2. Tonearm is on the rest position. (Blank area of the record.)<br>3. Adjust VR901 so that the output voltage is 4V ± 0.4V. |
| 4 | **Sensor resolution** | 1. Remove the cover insert the connector for adjustment into terminal CN901. (Fig. 19)<br>2. Connect the oscilloscope to 7-pin (+) and 1-pin (–).<br>3. Put on the record for adjustment with side A up. | VR902 (Fig. 16) | 1. Turn the power switch on.<br>2. Push the program key to let it search the tonearm. (Output is delivered between the tunes.)<br>3. Adjust VR902 so that the peak output between tunes is 3V ± 0.3V. (Fig. 20) |
| 5 | **Stylus cue-down position** | 1. Open the upper cabinet and hold the cabinet switch with tape.<br>2. Put on the record for adjustment with side B up.<br>3. Close the upper cabinet.<br>4. Connect the unit to the amplifier. (Connect the speakers to the speaker terminals.) | VR302 (Fig. 21) | 1. Turn the power switch on.<br>2. Push the program key 2, followed by start switch.<br>3. After completion of cueing down, push the program key 2 for the purpose of skipping.<br>4. Make sure that descending position is at count "18 ~ 19".<br>5. Adjust VR302 so that the decending position is at count 18 ~ 19". |
| 6 | **Tonearm offset angle** | 1. Open the upper cabinet and hold the cabinet switch with tape.<br>2. Close the upper cabinet. | Adjusting screw (Fig. 22) | 1. Turn the power switch on and push the start switch to shift the tonearm inward.<br>2. Open the upper cabinet.<br>3. Turn the adjusting screw so that the arm center matches the V-groove of the lift bar. |
| 7 | **Servo gain and offset voltage** | 1. Open the upper cabinet and hold the cabinet switch with the tape.<br>2. Close the upper cabinet.<br>3. Connect the DC voltmeter to CN301 terminal 5 and ground terminal.<br>4. Remove the sensor cover (Fig. 23) | VR501 (Servo gain) Screw (Offset voltage) (Fig. 23, 24) | 1. Turn the power switch on and push the start switch to shift the tonearm inward.<br>2. Open the upper cabinet.<br>3. Completely shift the tonearm to the left. Then, adjust VR501 so that the voltage is 3.6V. **(Servo gain)**<br>4. Set the tonearm to the center and make sure that the output voltage is 1.8V.<br>5. If the voltage is not 1.8V, adjust screw so that the output voltage is 1.8V. **(Offset voltage)** |

## • Adjustment points

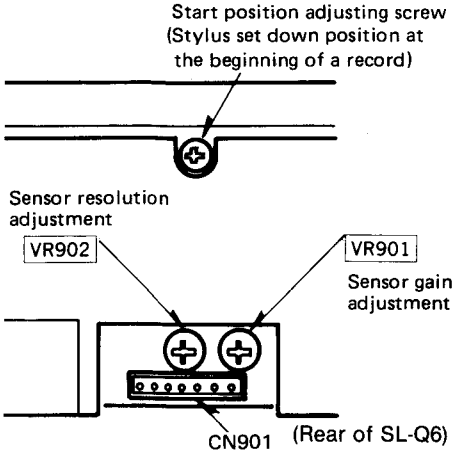



Fig. 16

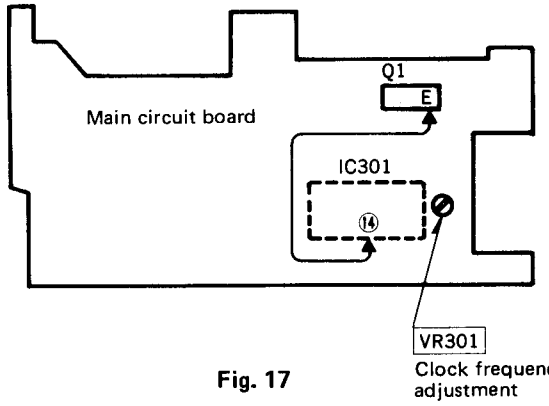



Fig. 17

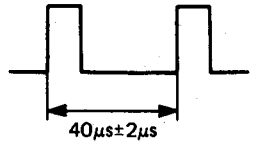



Fig. 18

Fig. 20

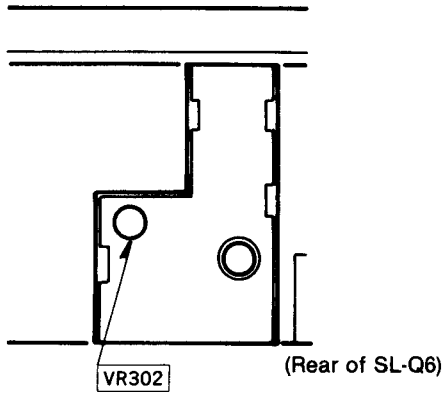
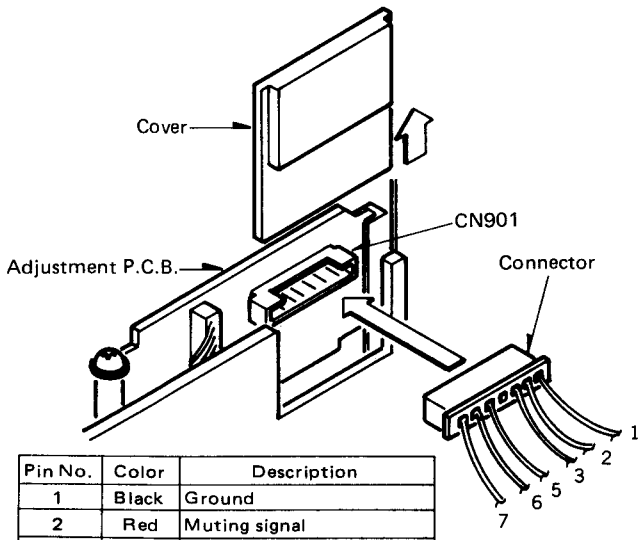



Fig. 21




| Pin No. | Color | Description |
|---|---|---|
| 1 | Black | Ground |
| 2 | Red | Muting signal |
| 3 | Orange | Cueing signal |
| 6 | Blue | Sensor amp. output signal |
| 7 | Violet | Filter amp. output signal |

Fig. 19

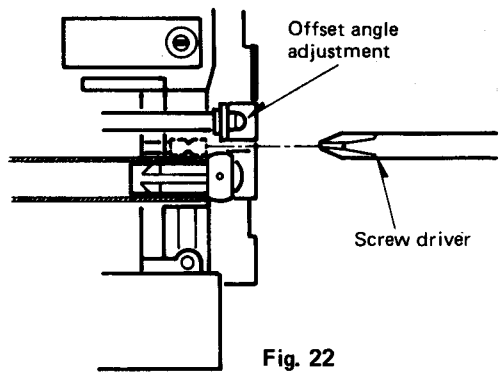



Fig. 22

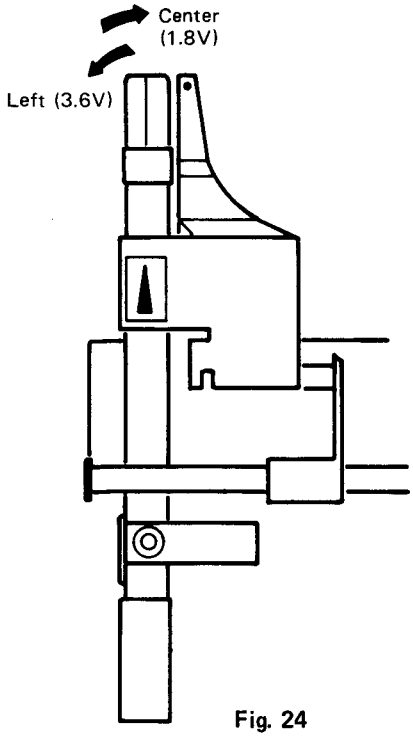



Fig. 24

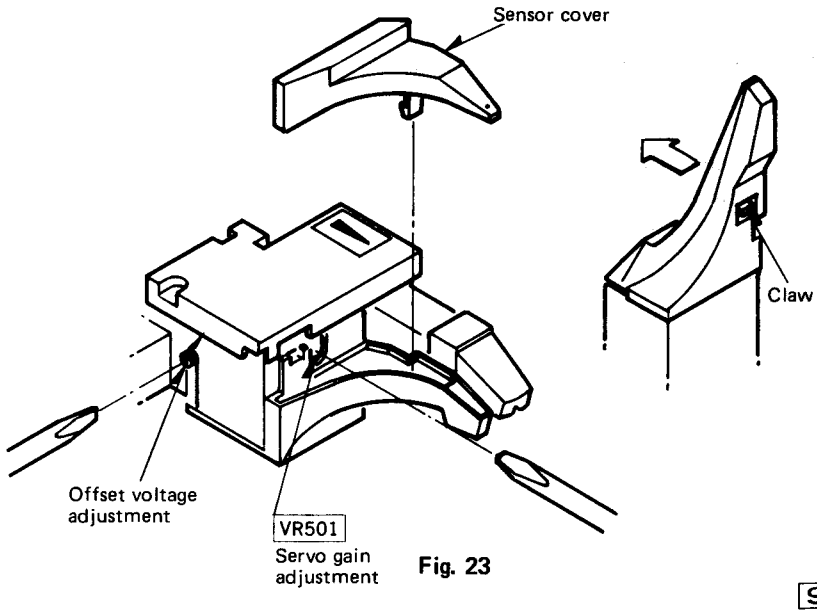



Fig. 23

# ■ TROUBLE SHOOTING

## 1. How to use the repair table (Fig. 25)

① Remove the bottom board.
② Remove the main circuit board and connect the P.C.B. ground terminal to the chassis (Stator frame).
③ Put the unit on the repair table.
④ Fit the turntable platter and put on the turntable mat.
⑤ Put on the record and check the circuits from under the unit.

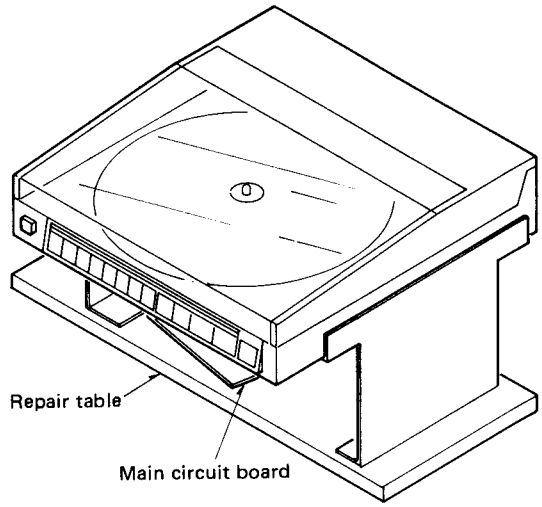



Fig. 25

## 2. How to raise the unit (Fig. 26)

**Note:** Turntable platter is not fixed on the center spindle. Take care so that the turntable platter will not come loose. Also, take care allow the set to fall down.

① Remove the bottom board.
② Completely open the upper cabinet.
③ Hold the cabinet (Reset) switch with tape.
④ Fit the turntable platter.
⑤ Raise the unit and check the circuits.

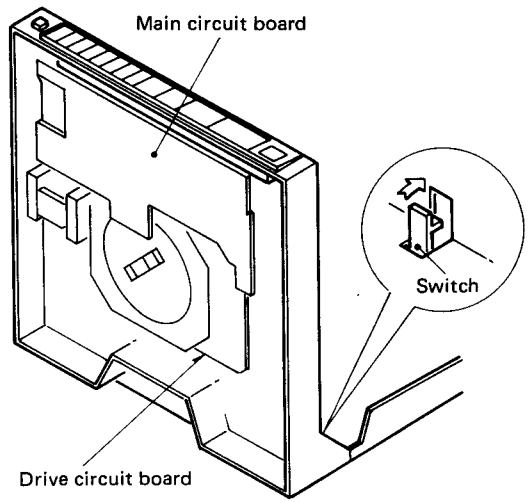



Fig. 26

## 3. How to turn over the unit (Fig. 26)

**Note:** This purpose is to check the voltage of each circuit during stop of the turntable.

① Remove the turntable platter and turn over the unit.
② Remove the bottom board.
③ Turn the power switch "on" and check the voltage.

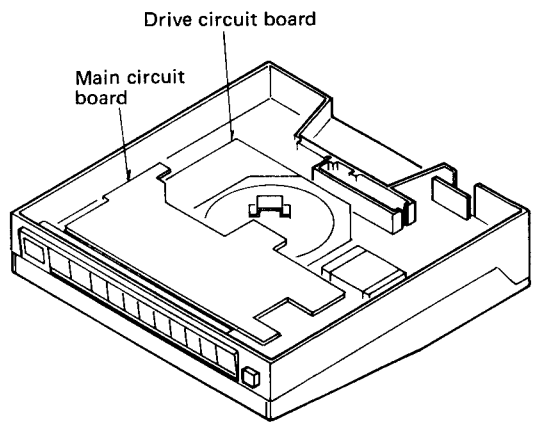



Fig. 27

**Turntable does not rotate**

Ⓒ, Ⓑ, Ⓔ of transistor are as follows:
Ⓒ : Collector
Ⓑ : Base
Ⓔ : Emitter

*1
Check points in [ ] are common to all symptoms.

*2
IC301 terminals ⑭ ~ ⑰, ㉑ emit signals when key switch is pushed or speed selector is shifted.

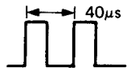
*1

**Power source circuit**
1. AC18V between CN1 terminals ① and ②.
2. DC voltage of regulator IC (IC1)
   ① 19.8V, ② 0V, ③ 11.9V
3. DC voltage of regulator transistor (Q1)
   Ⓒ 9.5V Ⓑ 5.7V Ⓔ 5V

NO → AC cord, S1, T1, D1, IC1, Q1, C1 ~ C5, R1~R4, D2

YES

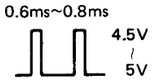
**Clock frequency**
1. Connect between Q1 Ⓔ and IC301 ⑭.
   Waveform of terminal ⑬ of IC301.




NO → IC301, VR301, R331, C301

YES

*2
**Key scan signal**
1. Waveform of terminals ⑭ ~ ⑰, ㉑ ~ ㉕ of IC301.




NO → IC301, D312~317, S301~316, S701

YES

**Cabinet opening/closing detection**
1. DC voltage at terminal ㉑ of IC301.
   • Close the upper cabinet . . . . . 1V
   • Open the upper cabinet . . . . . 0V

NO → S701, IC301

YES

**Power supply input terminal**
1. DC voltage at terminal ① of IC101. (11.9V)
2. DC voltage at terminal ⑱ of IC201. (8.5V)

NO → IC101, IC201, R204, R208

YES

Push start switch (S311). ➡

**Start/stop and brake circuit**
1. DC voltage at terminal ㉛ of IC301. (0V), At stop 4.8V
2. DC voltage at terminal ⑩ of IC201. (0V), At stop 4.8V
3. DC voltage at terminal ⑫ of IC201. (0.6V), At stop 0V

NO → IC301, IC201, IC101, S311, C107

YES

**Drive coil and Hall element**
1. Conduction check of drive coils. (About 33Ω)
2. DC voltage of Hall elements.
   ① 3.8V, ② 7.6V, ③ 3.8V, ④ 0V

NO → Drive coil, H101, H102, IC101

YES

**Drive circuit (Stop)**
1. DC voltage at each terminal of IC101.

| | ② | ③ | ④ | ⑤ | ⑥ | ⑦ | ⑧ | ⑨ | ⑩ | ⑪ |
|---|---|---|---|---|---|---|---|---|---|---|
| Voltage | 0V | 11.7V | 0V | 0V | 0V | 0V | 0V | 0V | 0V | 6V |

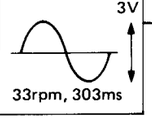
NO → IC101

YES

**Drive circuit (Rotation)**
1. DC voltage at each terminal of IC101.

| | ② | ③ | ⑨ | ⑩ | ⑪ |
|---|---|---|---|---|---|
| Voltage | 0.6V | 11.7V | 4.9V | 4.9V | 4.7V |

2. Waveform between terminal.
   ④ and ⑤ (⑥ and ⑦) of IC101.

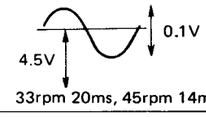



NO → IC101



**Unsatable rotation**

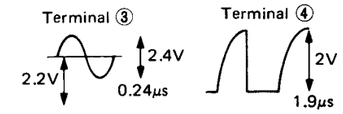
**FG amplifier circuit**
1. Conduction check of FG coil.
2. Waveform of terminal ⑮ of IC201.




NO → FG coil, IC201, R203, R205, C201~203

YES

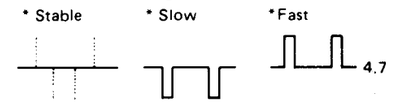
**Quartz oscillator circuit**
1. Waveforms of terminals ③ and ④ of IC201.



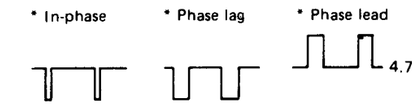

NO → X201, IC201, C204~206

YES

**Speed and phase control circuit**
1. Waveform of terminal ⑭ of IC201




2. Waveform of terminal ⑬ of IC201.




NO → IC201, IC101

**Arm motor does not rotate**

**Motor control circuit**
1. DC voltage at each terminal of IC301.

| | ㉜ | ㉝ | ㉞ | ㉟ |
|---|---|---|---|---|
| Stop | 5V | 5V | 0.2V | 0.2V |
| Lead-in | 0V | 5V | 0.2V | 0.8V |
| Return | 5V | 0V | 0.8V | 0.2V |

2. DC voltage at each terminal of IC401.

| | ① | ② | ③ | ⑤ | ⑥ | ⑦ |
|---|---|---|---|---|---|---|
| Stop | 0.1V | 4.2V | 3.6V | 3.6V | 4.2V | 0.1V |
| Lead-in | 10.9V | 2.1V | 3.6V | 3.6V | 4.2V | 0.1V |
| Return | 0.1V | 4.2V | 3.6V | 3.6V | 2.1V | 10.3V |

3. DC voltage at each terminal of Q401~404.

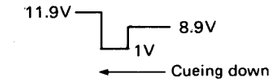
| | Q401 | | Q403 | |
|---|---|---|---|---|
| | Ⓑ | Ⓔ | Ⓑ | Ⓒ |
| Stop | 0.1V | 0.1V | 0.2V | 0.1V |
| Lead-in | 9.1V | 8.5V | 0.7V | 8.5V |

| | Q402 | | Q404 | |
|---|---|---|---|---|
| | Ⓑ | Ⓔ | Ⓑ | Ⓒ |
| Stop | 0.1V | 0.1V | 0.2V | 0.1V |
| Return | 9.1V | 8.5V | 0.7V | 8.5V |

NO → IC301, IC401, Q401~404, RF1, Motor

**Cueing down/ up does not work**

**Cueing control circuit**
1. DC voltage at terminals ㊲ and ㊳ of IC301.
   • Terminal ㊲ . . . . . During cueing and down (0.8V)
   • Terminal ㊳ . . . . . Only during cueing down (1.6V)
2. DC voltage of Q304 of collector.




NO → IC301, S312, Q303, Q304, Cueing plunger

## ■ HOW TO SET THE TONEARM DRIVE ROPE

When setting the rope, follow the procedure given below.

1. Remove the dust cover and tonearm cover. **(Refer to "How to remove the dust cover.")**
2. Remove the roller cover. **(Fig. 28)**
3. Set the rope in the order of 1 ~ 5 **(Fig. 28)**
4. Fit the rope connector to the tonearm.
5. Set the roller cover and turn the worm gear by hand to see that the tonearm moves.

**Note:** The arm drive wheel is not fixed. So, take care not to let is come loose during servicing. (Stop it with C-ring to prevent its removal.)

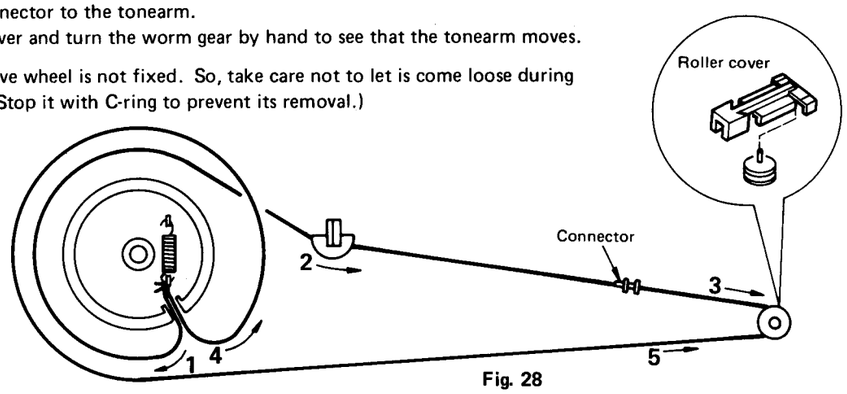


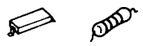

**Fig. 28**

## ■ HOW TO REPLACE CHIPS

**(Resistor, capacitor and jumper)**

### • Removing procedure

1. Completely remove the solder from both ends of the chip by use of solder suker.
2. Touch the soldering iron to the end of the chip as shown in Fig. 29, then turn the tweezers in the direction of the arrow.



Witout color code  With color code

Chip resistor

Do not re-use chip resistor or capacitor without color cord.

### • Replacing procedure

1. Place solder on the foil where the chip is fitted.
   Then solder the chip by holding the soldering iron as shown in Fig. 30.

**Note:**

1. If the chip jumper is removed, connect a coated lead wire to the part. (See Fig. 31).
   Chip jumper is marked with "J" on the printed circuit board.

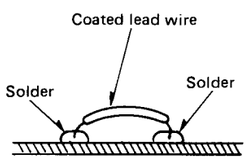



**Fig. 31**

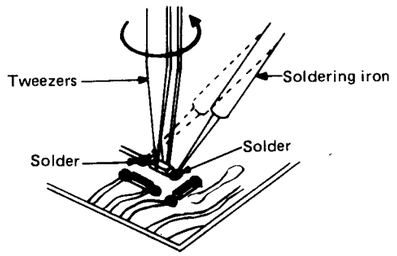



**Fig. 29**

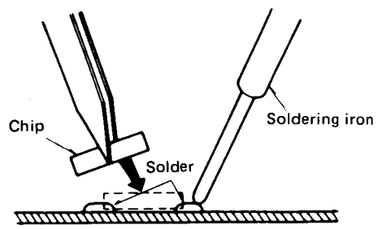



**Fig. 30**

### • Note for replacing chips

1. Do not heat the chip more than 3 seconds.
2. Do not rub the electrode against the chip.
3. Use the tweezers with care not to damage the surface of the chip.
4. It is desirable to use a pencil type soldering iron. And use soldering iron less than 60W.



## ■ RESISTORS AND CAPACITORS

**Notes:**

1. Part numbers are indicated on most mechanical parts. Please use this part number for parts orders.
2. Important safety notice: Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.
3. This "Ⓢ" mark is service standard parts and may differ from production parts.
4. Unless otherwise specified. All resistors are in OHMS (Ω) K = 1000Ω, M = 1000kΩ All capacitors are in MICROFARADS(μF), P = $10^{-6}$ μF.

**Numbering System of Resistor**

Example

| | | | | |
|---|---|---|---|---|
| ERD | 25 | F | J | 101 |
| Type | Wattage | Shape | Tolerance | Value |
| ERG | 1 | AN | J | 2R2 |
| Type | Wattage | Shape | Tolerance | Value |

| Resistor Type | Wattage | Tolerance |
|---|---|---|
| ERD : Carbon | 25 : 1/4W | F : ±1% |
| ERG : Metal Oxide | 1 : 1W | J : ±5% |
| ERX : Metal Film | 2 : 2W | G : ±2% |

ERD2FCG□□□ ⟶ Fuse type carbon (1/4W)
ERD10TLJ□□□ ⟶ Chip type carbon (1/8W)
ECUV1H□□□ ⟶ Chip type ceramic capacitor
ERDS2TJ□□□ ⟶ Small type carbon (1/4W)

**Numbering System of Capacitor**

Example

| | | | | |
|---|---|---|---|---|
| ECKD | 1H | 102 | Z | F |
| Type | Voltage | Value | Tolerance | Peculiarity |
| ECEA | 50 | M | R47 | R |
| Type | Voltage | Peculiarity use | Value | Special use |

| Capacitor Type | Voltage | | Tolerance |
|---|---|---|---|
| | ECEA Type | Others | |
| ECEA : Electrolytic | 1A : 10V | 1H : 50V DC | J : ±5% |
| ECKD : Ceramic | 1C : 16V | 2H : 500V DC | K : ±10% |
| ECQM : Polyester | 1E : 25V | 1 : 100V | Z : +80%, −20% |
| ECCD : Ceramic | 1V : 35V | AL : 125V AC | P : +100%, −0% |
| ECKF : Ceramic | 1H : 50V | MY : 125V AC | M : ±20% |
| ECEB : Electrolytic | 1J : 63V | | |
| | 50 : 50V | | |

| Ref. No. | Part No. | Value |
|---|---|---|
| **RESISTORS** | | |
| RF1 ⚠ | ERD2FCG180 | 18 |
| R1 | ERDS2TJ101 | 100 |
| R2 | ERDS2TJ221 | 220 |
| R3 | ERGS2SJ330 | 33 |
| R4 | ERDS2TJ221 | 220 |
| R103 | ERD10TLJ104 | 100K |
| R104 | ERX1ANJ2R7 | 2.7 |
| R105 | ERD10TLJ270 | 27 |
| R201 | ERD10TLJ393 | 39K |
| R202 | ERD10TLJ394 | 390K |
| R203 | ERD10TLJ680 | 68 |
| R204 | ERD10TLJ151 | 150 |
| R205 | ERD10TLJ223 | 22K |
| R207 | ERD10TLJ102 | 1K |
| R208 | ERD10TLJ680 | 68 |
| R320 | ERDS2TJ333 | 33K |
| R321 | ERDS2TJ471 | 470 |
| R322 | ERDS2TJ102 | 1K |
| R323 | ERDS2TJ333 | 33K |
| R324 | ERDS2TJ222 | 2.2K |
| R325 | ERDS2TJ103 | 10K |
| R326 | ERDS2TJ472 | 4.7K |
| R327 | ERDS2TJ223 | 22K |
| R328 | ERDS2TJ103 | 10K |
| R329 | ERDS2TJ222 | 2.2K |
| R331 | ERDS2TJ102 | 1K |
| R334,335 | ERDS2TJ331 | 330 |
| R336 | ERDS2TJ103 | 10K |
| R337 | ERDS2TJ223 | 22K |
| R338 | ERDS2TJ272 | 2.7K |
| R339 | ERDS2TJ561 | 560 |
| R340 | ERDS2TJ681 | 680 |
| R341 | ERDS2TJ563 | 56K |

| Ref. No. | Part No. | Value |
|---|---|---|
| R342 | ERDS2TJ471 | 470 |
| R343 | ERDS2TJ103 | 10K |
| R345 | ERDS2TJ472 | 4.7K |
| R346 | ERDS2TJ333 | 33K |
| R347 | ERDS2TJ563 | 56K |
| R348 | ERDS2TJ333 | 33K |
| R351 | ERDS2TJ471 | 470 |
| R352 | ERDS2TJ472 | 4.7K |
| R353 | ERDS2TJ222 | 2.2K |
| R357 | ERDS2TJ223 | 22K |
| R358 | ERDS2TJ333 | 33K |
| R359 | ERDS2TJ471 | 470 |
| R360 | ERDS2TJ683 | 68K |
| R401 | ERDS2TJ683 | 68K |
| R402 | ERDS2TJ222 | 2.2K |
| R403 | ERDS2TJ102 | 1K |
| R404 | ERDS2TJ224 | 220K |
| R405 | ERDS2TJ683 | 68K |
| R406 | ERDS2TJ222 | 2.2K |
| R407 | ERDS2TJ102 | 1K |
| R408 | ERDS2TJ224 | 220K |
| R409 | ERDS2TJ273 | 27K |
| R410 | ERDS2TJ103 | 10K |
| R501 Ⓢ | ERD25FJ271 | 270 |
| R502 Ⓢ | ERD25FJ391 | 390 |
| R503 Ⓢ | ERD25FJ561 | 560 |
| R801 | ERDS2TJ154 | 150K |
| R802 | ERDS2TJ272 | 2.7K |
| R803 | ERDS2TJ154 | 150K |
| R805 | ERDS2TJ222 | 2.2K |
| R806 | ERDS2TJ472 | 4.7K |
| R807 | ERDS2TJ332 | 3.3K |
| R808 | ERDS2TJ682 | 6.8K |

| Ref. No. | Part No. | Value |
|---|---|---|
| R809 | ERDS2TJ102 | 1K |
| R810 | ERDS2TJ103 | 10K |
| R811 | ERDS2TJ684 | 680K |
| R812 | ERDS2TJ223 | 22K |
| R813 | ERDS2TJ104 | 100K |
| R814 | ERDS2TJ684 | 680K |
| R815 | ERDS2TJ224 | 220K |
| R816 | ERDS2TJ221 | 220 |
| R817 | ERDS2TJ104 | 100K |
| R818 | ERDS2TJ102 | 1K |
| R819 | ERDS2TJ470 | 47 |
| R820 | ERDS2TJ222 | 2.2K |
| R821 | ERDS2TJ272 | 2.7K |
| R822 | ERDS2TJ220 | 22 |
| R823 | ERDS2TJ103 | 10K |
| R824 | ERDS2TJ472 | 4.7K |
| R825 | ERDS2TJ103 | 10K |
| R826 | ERDS2TJ332 | 3.3K |
| R827 | ERDS2TJ101 | 100 |
| R828 | ERDS2TJ394 | 390K |
| R829,830 | ERDS2TJ333 | 33K |
| R831 | ERDS2TJ222 | 2.2K |
| **CAPACITORS** | | |
| C1,2 ⚠ | ECQM1223KZ | 0.022 |
| C3 ⚠ | ECQM1223KZ | 0.022 |
| C4 Ⓢ | ECEB1EU222 | 2200 |
| C5 Ⓢ | ECEA1CU330 | 33 |
| C101 Ⓢ | ECEA1CU330 | 33 |
| C102 Ⓢ | ECEA50ZR22 | 0.22 |
| C103 | ECQM1H274JZ | 0.27 |
| C105,106 Ⓢ ⚠ | ECEA1CN470S | 47 |
| C107 Ⓢ | ECEA50Z1 | 1 |
| C201 Ⓢ | ECEA0JU470 | 47 |

| Ref. No. | Part No. | Value |
|---|---|---|
| C202 Ⓢ | ECEA50ZR22 | 0.22 |
| C203 Ⓢ | ECQM1H683JZ | 0.068 |
| C204 | ECUV1H121JCM | 120P |
| C205 | ECUV1H330JCM | 33P |
| C206 | ECUV1H101JCM | 100P |
| C207 Ⓢ | ECEA0JU470 | 47 |
| C208 Ⓢ | ECEA1AU470 | 47 |
| C301 | ECCD1H221K | 220P |
| C302 Ⓢ | ECQM1H104JZ | 0.1 |
| C303 | ECFR1H104ZF | 0.1 |
| C304 Ⓢ | ECEA0JU330 | 33 |
| C305 Ⓢ | ECEA1CU221 | 220 |
| C306 Ⓢ | ECEA1HU4R7 | 4.7 |
| C309 | ECFR1H104ZF | 0.1 |
| C401,402 Ⓢ | ECQM1H223JZ | 0.022 |
| C403 Ⓢ | ECQM1H224JZ | 0.22 |
| C601 | ECFB1B104ZM | 0.1 |
| C701 Ⓢ | ECEA1CU101 | 100 |
| C801 Ⓢ | ECQM1H103JZ | 0.01 |
| C802,803 Ⓢ | ECQM1H104JZ | 0.1 |
| C804 Ⓢ | ECEA1CU220 | 22 |
| C805 Ⓢ | ECEA1CU470 | 47 |
| C806 Ⓢ | ECEA50M1R | 1 |

# ■ REPLACEMENT PARTS LIST (Electric Parts)

**Notes:** 1. Part numbers are indicated on most mechanical parts. Please use this part number for parts orders.
2. Important safety notice: Components identified by ⚠ mark have special characteristics important for safety. When replaceing any of these components, use only manufacturer's specified parts.
3. Bracketed indications in Ref. No. columns specify the area. Parts without these indications can be used for all areas.
4. The "Ⓢ" mark is service standard parts and may differ from production parts.

**Areas**

*[M] is available in U.S.A.
*[MC] is available in Canada.

| Ref. No. | Part No. | Description |
|---|---|---|
| **INTEGRATED CIRCUITS** | | |
| IC1 | SVIUPC7812H | Regulator |
| IC101 | AN6637 | Turntable Drive |
| IC201 | AN6683 | Turntable Control |
| IC301 | MN1425FPJ | Micro Computer |
| IC401 | AN6552F | Tonearm Motor Control |
| IC801 | AN6562 | Brank Groove Detection |
| IC802 | AN6912 | Comparator |
| **TRANSISTORS** | | |
| Q1 Ⓢ | 2SC1383Q | Regulator |
| Q301,302 | 2SD636 | Switching,Muting Drive |
| Q303,304 | 2SD636 | Cueing Control |
| Q305 | 2SB641 | Offset Angle Detection |
| Q306 | 2SD636 | Offset Angle Detection |
| Q307,308,309 | 2SB641 | Switching, Weaveform Sharping |
| Q312 | 2SD636 | Switching |
| Q401,402 Ⓢ | 2SD973S | Tonearm Motor Control |
| Q403,404 | 2SD638 | Tonearm Motor Control |
| Q801 | 2SB641 | Switching |
| Q801 | 2SD636 | Switching |
| Q803 | 2SB641 | Switching |
| **DIODES** | | |
| D1 ⚠Ⓢ | SVDS1RBA20Z | Rectifier |
| D2 | MA4056 | 5.6V Zener |

| Ref. No. | Part No. | Description |
|---|---|---|
| D301~308,311 | SVDZQ06N02 | Program/ Repeat Indicator |
| D312~317 | MA165 | Switching |
| D319 | MA4075 | 7.5V Zener |
| D320 | SVDZQ06N02 | Cueing Up Indicator |
| D321 | SVDZQ06N03 | Cueing Down Indicator |
| D322,323 | MA165 | Switching |
| D501 Ⓢ | MA162A | Switching |
| D502 | SVDEBR3432S | L.E.D.Indicator |
| D701 | MA165 | Switching |
| D801,802 | MA165 | Switching |
| D803 | MA4047 | 4.7V Zener |
| D804 | MA165 | Switching |
| D806 | MA4075 | 7.5V Zener |
| **HALL ELEMENTS** | | |
| H101,102 | OH-002 | Turntable Position Detection |
| **CRYSTAL** | | |
| X201 | SVQSH41TR | 4.193MHz |
| **SWITCHES** | | |
| S1 ⚠ | SFDSC02N02 | On/Off(Power) |
| S301~312 | EVQQS405K | Program,Cueing, Repeat,Start and Stop |
| S315 | SFDSHSW0699 | Speed Selector |
| S601 | SFDSC02N03 | Rest Switch |
| S701 | SFDSC05N01 | Reset |
| S801,802 | SFDSHSW0699 | Sensor Sensitivity |

| Ref. No. | Part No. | Description |
|---|---|---|
| **PHOTO INTERRUPTERS** | | |
| PC501 | ON1186 | Offset Angle Detection |
| PC502 | ON2168 | Blank Groove Detection |
| PC601 | ON1161 | Tonearm Position Detection |
| **VARIABLE RESISTORS** | | |
| VR301 | EVN61AA00B54 | Clock Frequency Adjustment, 50kΩ(B) |
| VR302 | EVJEDAF20B54 | Cueing Down Position Adjustment,50kΩ(B) |
| VR501 Ⓢ | EVNM0AA00B53 | Servo Gain Adjustment,5kΩ(B) |
| VR901,902 | EVN58AA00B15 | Gain Adjustment, 100kΩ(B) |
| **RELAY** | | |
| RL701 | SFDYQ11N02 | Muting |
| **POWER TRANSFORMER** | | |
| T1 [M] ⚠ | SLT48DTL3A | Power Source |
| T1 [MC] ⚠ | SLT48DT11C | Power Source |
| **FUSE** | | |
| F1 [MC only] ⚠ | XBA2F08NU100 | 250V,800mA |
| **COMPONENT COMBINATIONS** | | |
| Z301,302 | EXBT44471K | 470Ω×4 |
| Z303 | EXBP84333K | 33kΩ×4 |
| Z304 | EXBP84103K | 10kΩ×4 |
| Z305 | EXBP84332K | 3.3kΩ×4 |
| Z306 | EXBP86122J | 1.2kΩ×6 |

## • Description of each terminal of MN1425FPJ

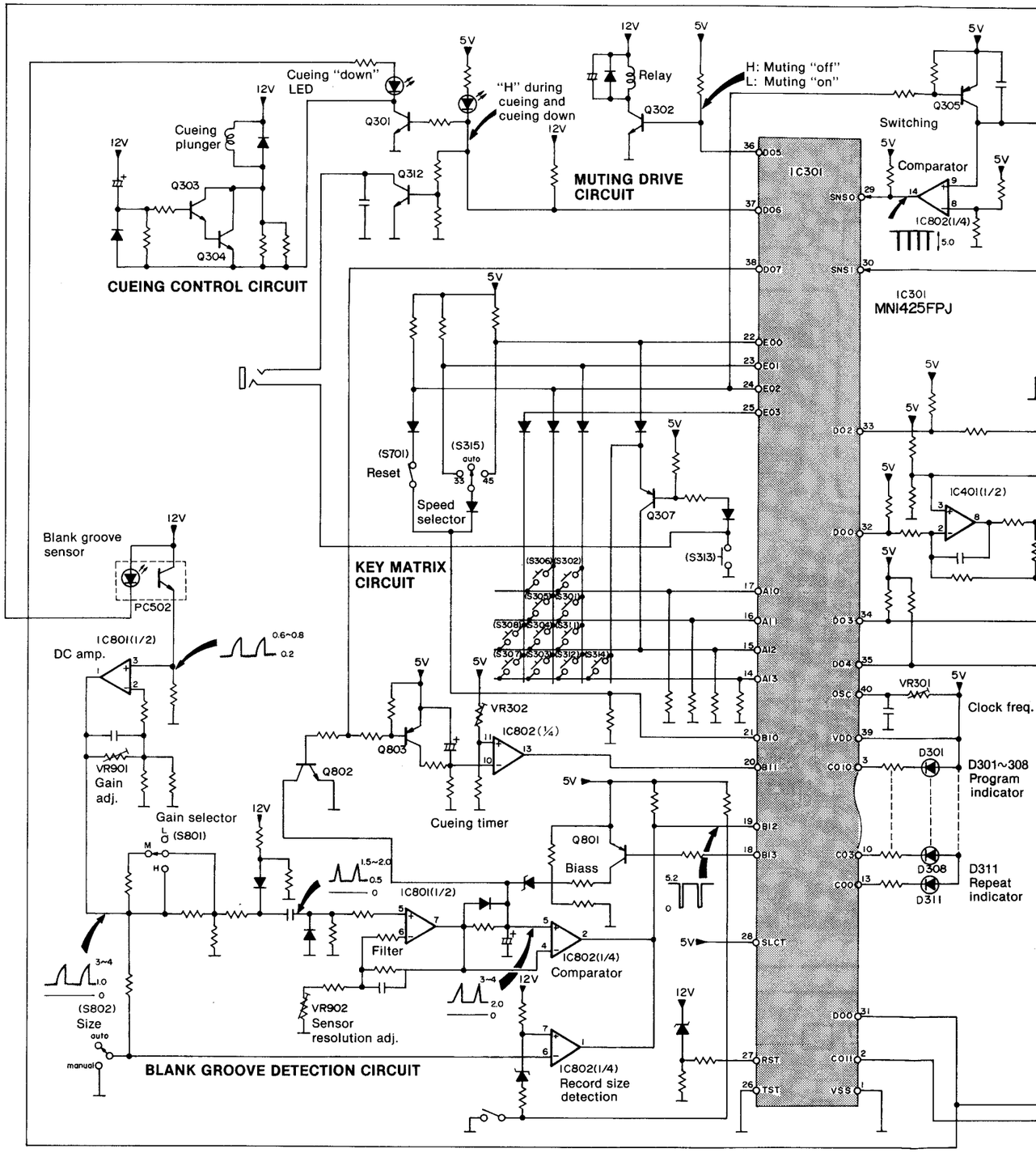
*These are the basic functions of MN1425FPJ. Therefore, some terminals are not necessary of circuit functions may be partially changed depending on the purpose.

| Pin No. | Symbol | Description |
|---|---|---|
| 1 | VSS | Ground terminal |
| 2 | C011 | Turntable speed select output terminal. (45 rpm at "H", 33 rpm at "L") |
| 3 | C010 | Program LED display output terminal. (LED ON at "L") |
| 4 | C09 | |
| 5 | C08 | |
| 6 | C07 | |
| 7 | C06 | |
| 8 | C05 | |
| 9 | C04 | |
| 10 | C03 | |
| 11 | C02 | Not used in this unit. |
| 12 | C01 | |
| 13 | C00 | Repeat LED display output terminal. (LED ON at "L") |
| 14 | AI3 | Key scan input terminal. (Each key is read in through key scan with E-port.) |
| 15 | AI2 | |
| 16 | AI1 | |
| 17 | AI0 | |
| 18 | BI3 | Rest position detection input terminal. ("L" when tonearm is on rest.) |
| 19 | BI2 | Blank groove detection and record detection terminal. [Blank groove detection pulse is active "L". When it is "H" at start, 30 cm record is detected. When it is "L", it is judged that there is no 30 cm record (17 cm or 25 cm record is present.)] |
| 20 | BI1 | Cueing time read input terminal. |

| Pin No. | Symbol | Description |
|---|---|---|
| 21 | BI0 | Turntable speed select and cabinet opening/ closing detection terminal. (Each operation is done through key scan with E-port.) |
| 22 | E00 | Key scan output terminal. (Each key—is read in through key scan with A-port.) |
| 23 | E01 | |
| 24 | E02 | |
| 25 | E03 | |
| 26 | TST | Test terminal (Not used in this unit.) |
| 27 | RST | Reset terminal. (The microcomputer is reset at "L", and is reset at "H". |
| 28 | SLCT | Select terminal |
| 29 | SNS0 | Offset angle detection signal input terminal. |
| 30 | SNS1 | Arm position detection signal input terminal. |
| 31 | D00 | Turntable start/stop select terminal. (Start at "L", stop at "H".) |
| 32 | D01 | Arm motor drive control terminal. |
| 33 | D02 | |
| 34 | D03 | |
| 35 | D04 | |
| 36 | D05 | Muting control terminal |
| 37 | D06 | Cueing control terminal. ("H" during cueing and cueing down.) |
| 38 | D07 | Cueing control terminal. ("H" only during cueing down.) |
| 39 | VDD | Power supply terminal. |
| 40 | OSC | Oscillation terminal. |



# ■ BLOCK DIAGRAM



mns specify the area.
e used for all areas.
parts and may differ

| art No. | Description |
|---|---|
| S | |
| 6 | Offset Angle Detection |
| 8 | Blank Groove Detection |
| 1 | Tonearm Position Detection |
| | |
| AA00B54 | Clock Frequency Adjustment, 50kΩ(B) |
| AF20B54 | Cueing Down Position Adjustment,50kΩ(B) |
| AA00B53 | Servo Gain Adjustment,5kΩ(B) |
| AA00B15 | Gain Adjustment, 100kΩ(B) |
| | |
| 11N02 | Muting |
| R | |
| DTL3A | Power Source |
| DT11C | Power Source |
| | |
| 08NU100 | 250V,800mA |
| ATIONS | |
| 4471K | 470Ω×4 |
| 4333K | 33kΩ×4 |
| 4103K | 10kΩ×4 |
| 4332K | 3.3kΩ×4 |
| 3122J | 1.2kΩ×6 |

ially changed

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| cabinet opening/ |
| ough key scan with |
| h key scan with |
| his unit.) |
| at "L", and is |
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| input terminal. |
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| ng down.) |
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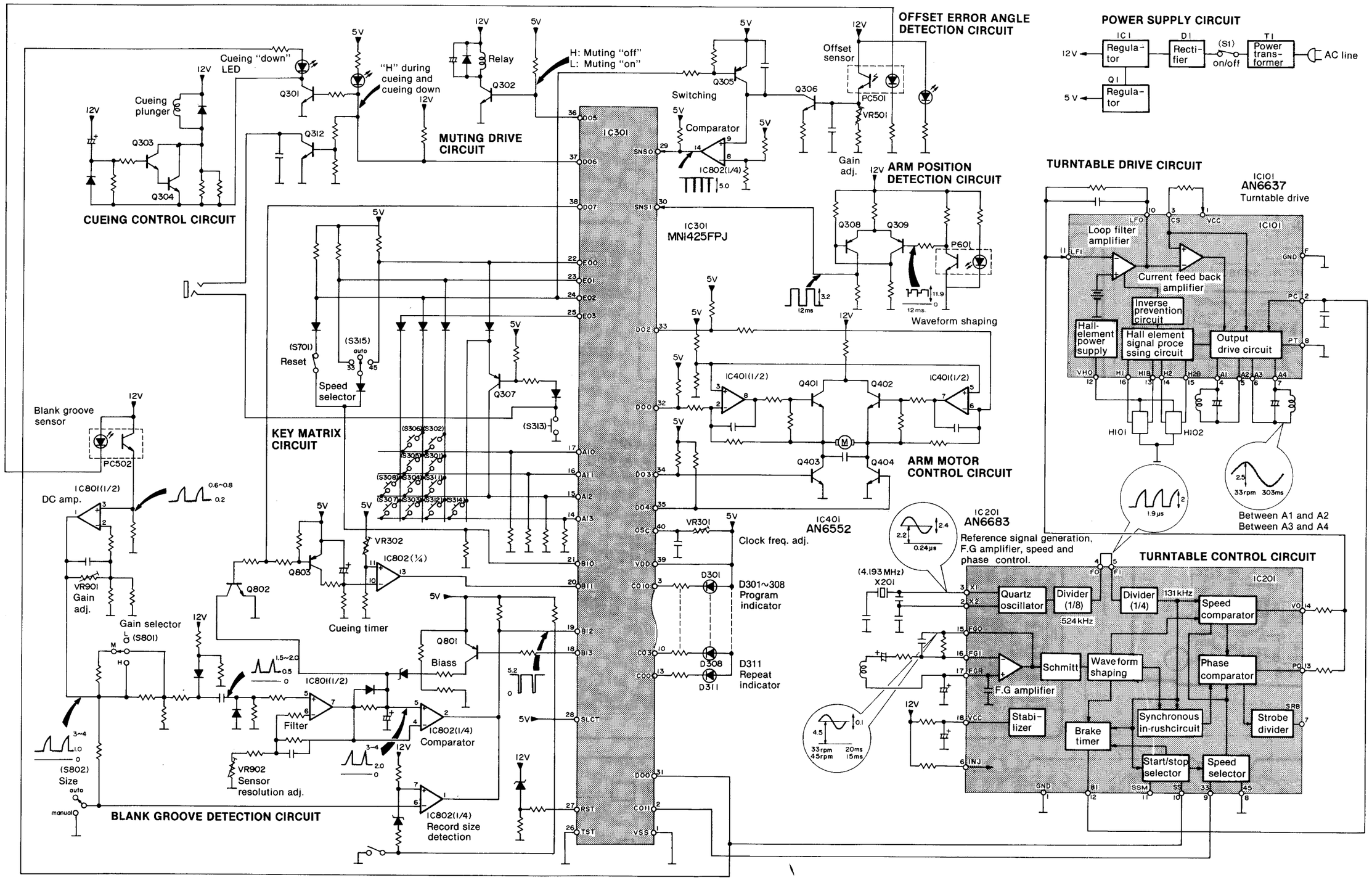
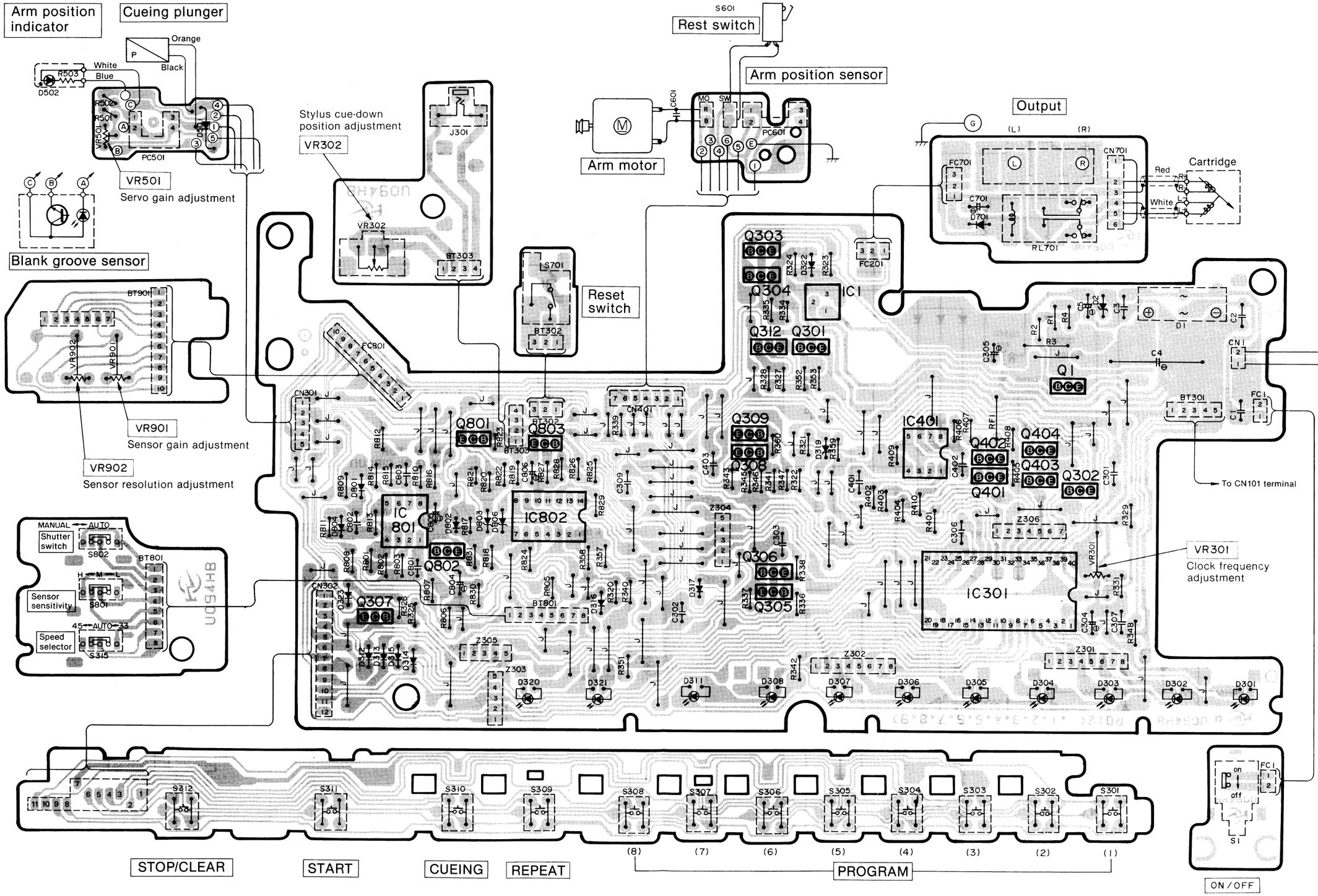
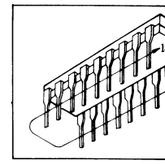
## ■ BLOCK DIAGRAM



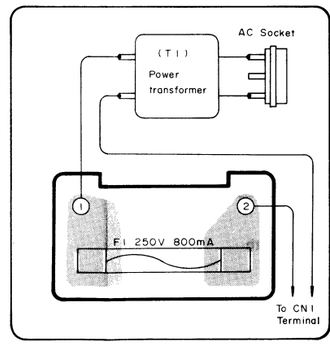
## ■ CIRCUIT BOARDS AND WIRING CONNECTION DIAGRAM



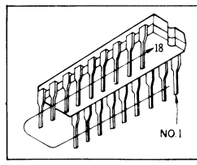

• **Terminal gui**



• **Power source circuit**
**Product for [MC] only.**

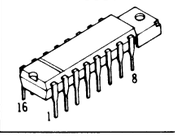


- **Terminal guide of transistors, and IC's**

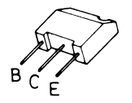



| | |
|---|---|
| AN6562 | 8 pin |
| AN6552 | 8 pin |
| AN6912 | 14 pin |
| MN1425 | 40 pin |
| AN6683 | 18 pin |

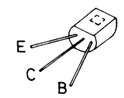
AN6637



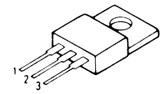

2SB641, 2SD638
2SD973, 2SD636

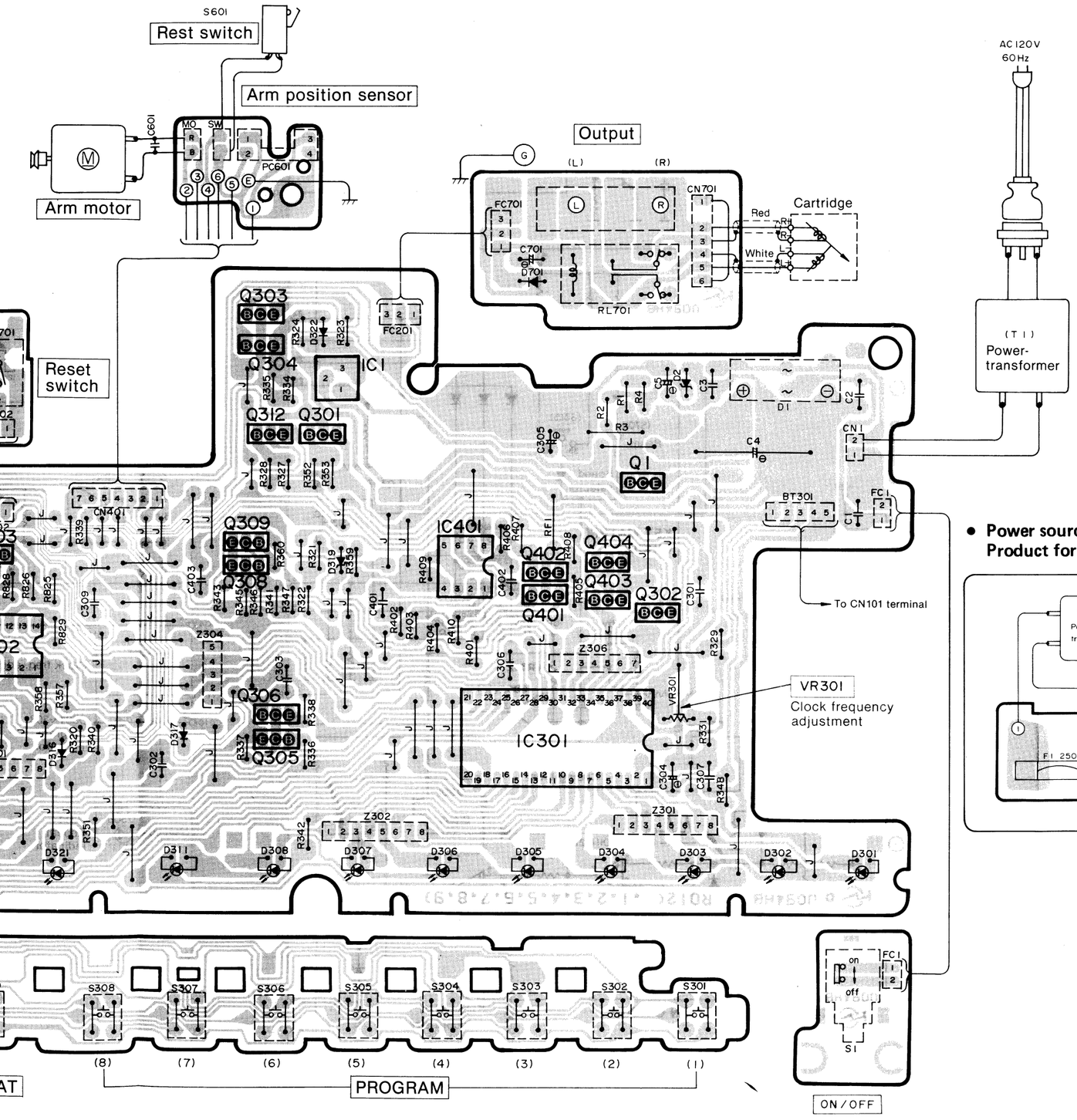



2SD892, 2SC1328

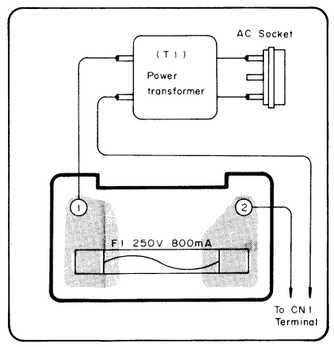


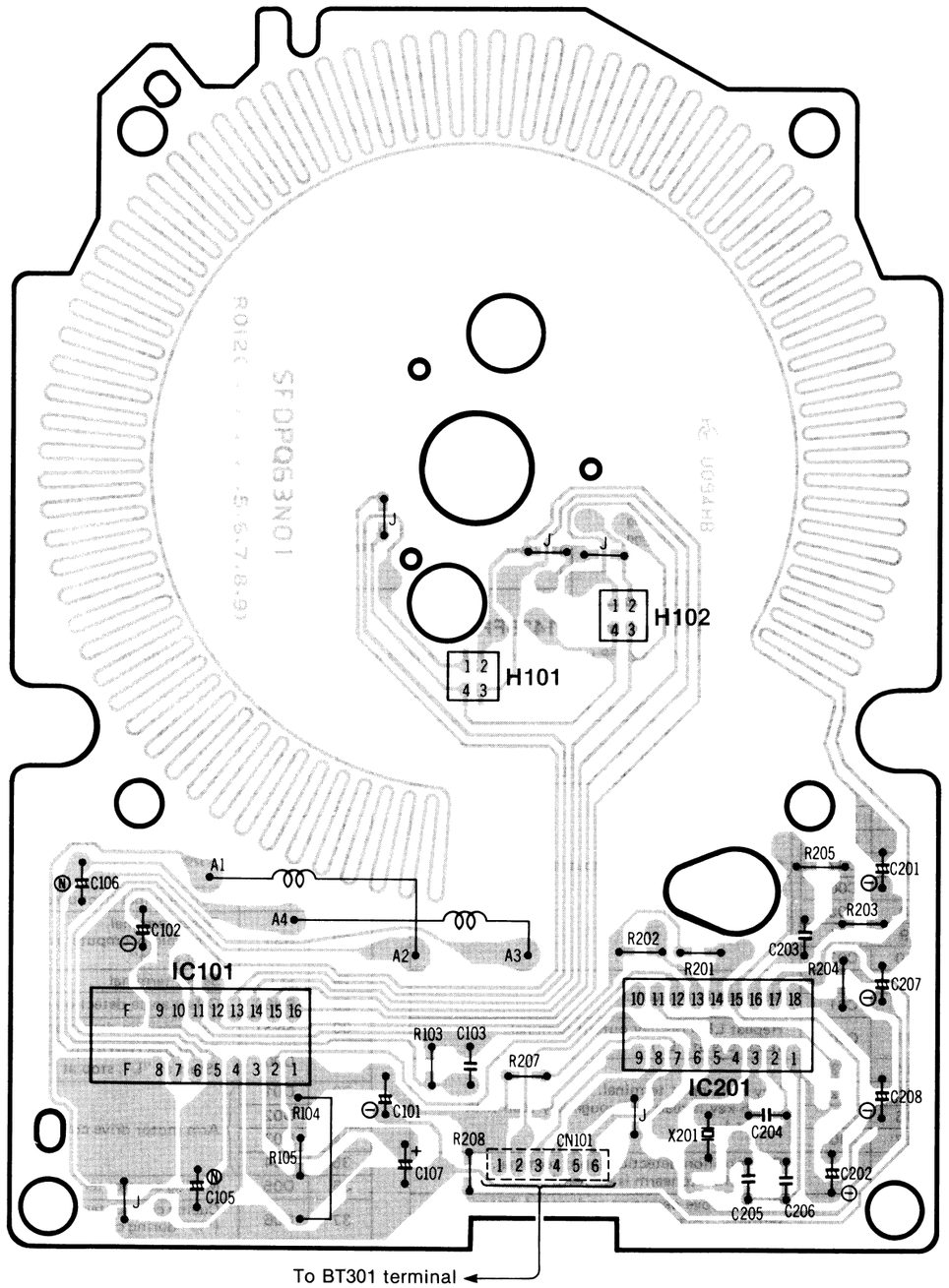

AN7812



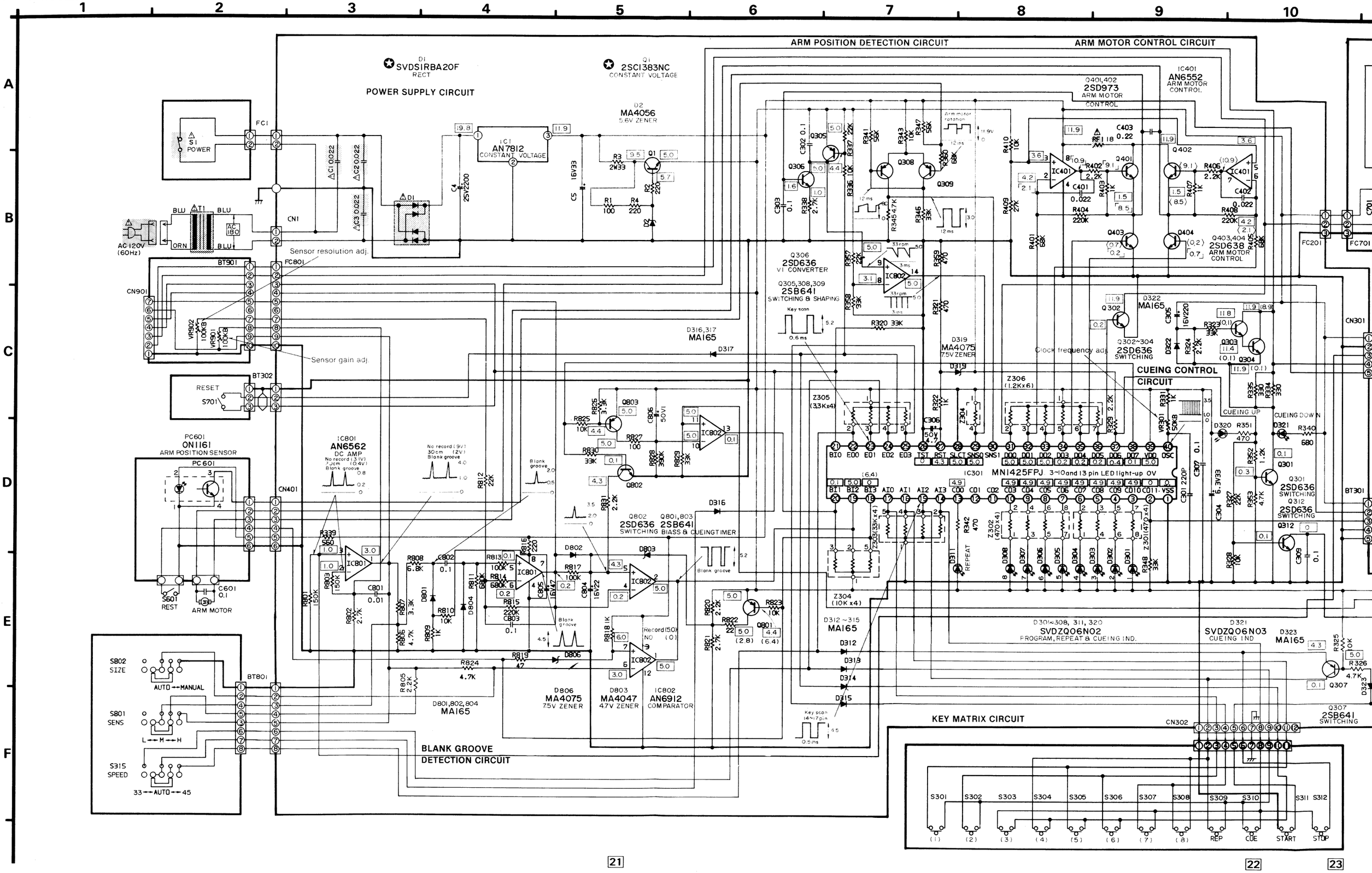

- **Power source circuit**
  **Product for [MC] only.**



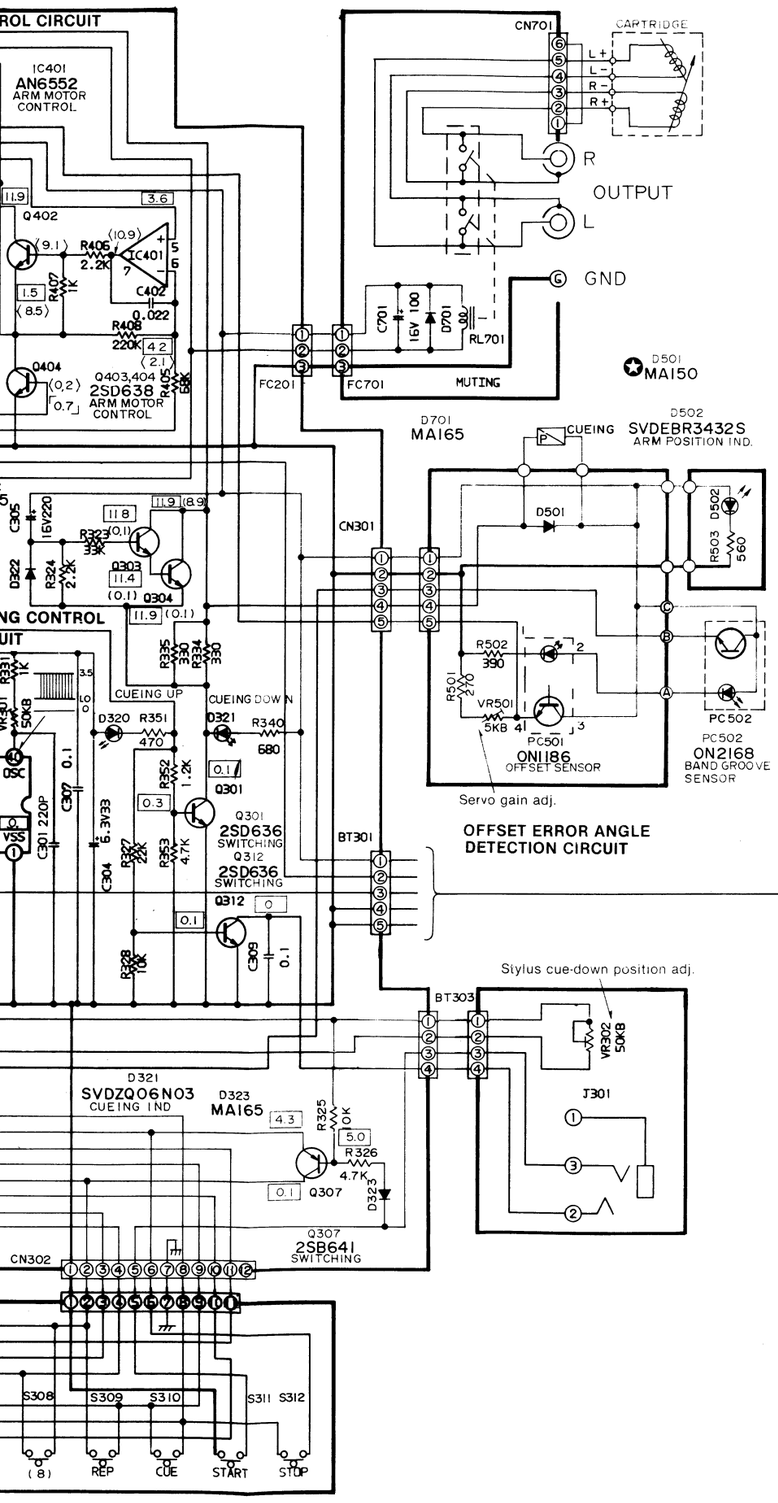



# ■ SCHEMATIC DIAGRAM

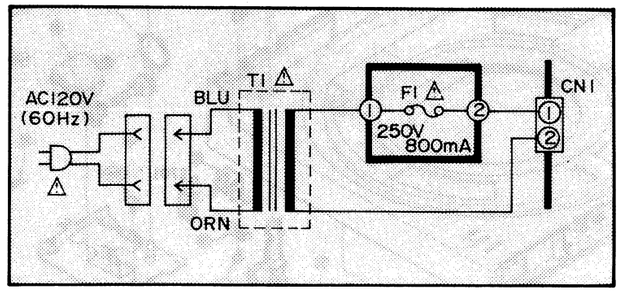
(This schematic diagram may be modified at any time with the development of new technology.)



9 10 11 12 13 14 15 16 17 18 19




- **Power source circuit**
  **Product for [MC] only.**




*The part No. of diodes mentioned in the schematic diagram stand for production part No. Regarding the part No. with ✪ mark the production part No. are different from the replacement part No. Therefore, when placing an order for replacement part, please use the part No. in the replacement parts list.

**IMPORTANT SAFETY NOTICE**

The shaded area on this schematic diagram incorporates special features important for protection from fire and electrical shock hazards.
When servicing it is essential that only manufacturer's specified parts be used for the critical components in the shaded areas of the schematic.

- **Product for MC only**

**FUSE REPLACEMENT**

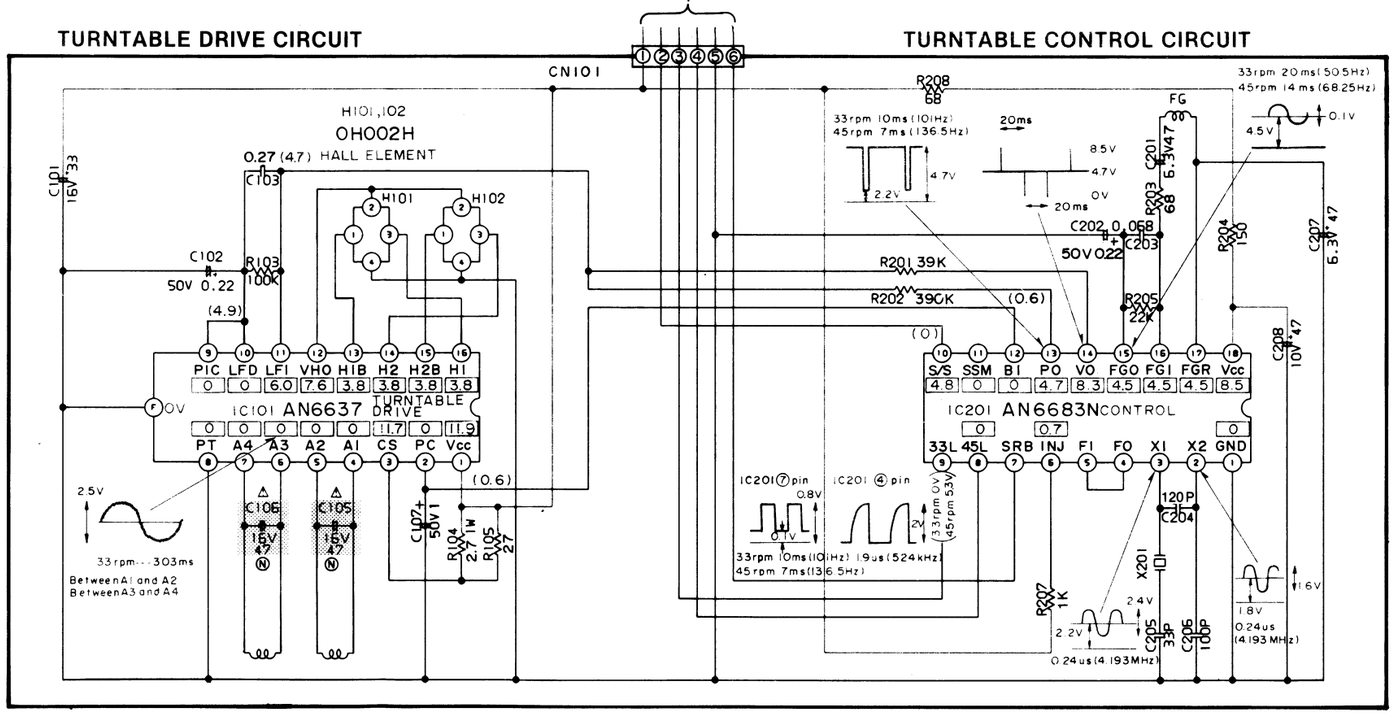
Symbol located near the fuse indicates fast operating type. For continued protection against fire hazard, replace with same type fuse. Refer to the symbol for fuse rating.

**FUSIBLE REMPLACEMENT**

Le symbole qui se trouve près du fusible singifie un fusible à action rapide. Pour une protection contiue contre les risques d'incendie, n'utiliser que des fusibles du même type. Se rapporter au symbole pour la valeur des fusibles.

**Notes:**

1. **S1** : On/off (power) switch in **"on"** position.
2. **S301 ~ S308** : Program switch (Program key 1 ~ 8).
3. **S309** : Repeat switch.
4. **S310** : Cueing control switch.
5. **S311** : Start switch.
6. **S312** : Stop/clear switch.
7. **S315** : Speed selector switch in **"auto"** position.
8. **S601** : Rest switch in **"off"** position. (Tonearm is off the rest position.)
9. **S701** : Cabinet (Reset) switch in **"on"** position. (Upper cabinet is closed.)
10. **S801** : Optical sensor sensitivity selector switch in **"M"** position.
11. **S802** : Record size (shutter) switch in **"auto"** position.
12. The voltage value and waveform are the standard values of this measured by DC electronic voltmeter (high impedance) and oscilloscope on the bais of chassis. Therefore, the voltage value and waveform may include some error due to the internal impedance of the tester or the measuring unit.
    * [ ] is the voltage when turntable is stop.
    * { } is the voltage when turntable is in rotation.
    * ⌜ ⌟ is the voltage when tonearm is in lead-in mode.
    * < > is the voltage when tonearm is in return mode.
    * ( ) is the voltage at 45 rpm.
13. ——— Positive voltage lines.
14. Important safety notice:
    Components identified by ⚠ mark have special characterisitcs important for safety.
    When replacing any of these components, use only manufacurer's specified parts.



## ■ SCHEMATIC DIAGRAM

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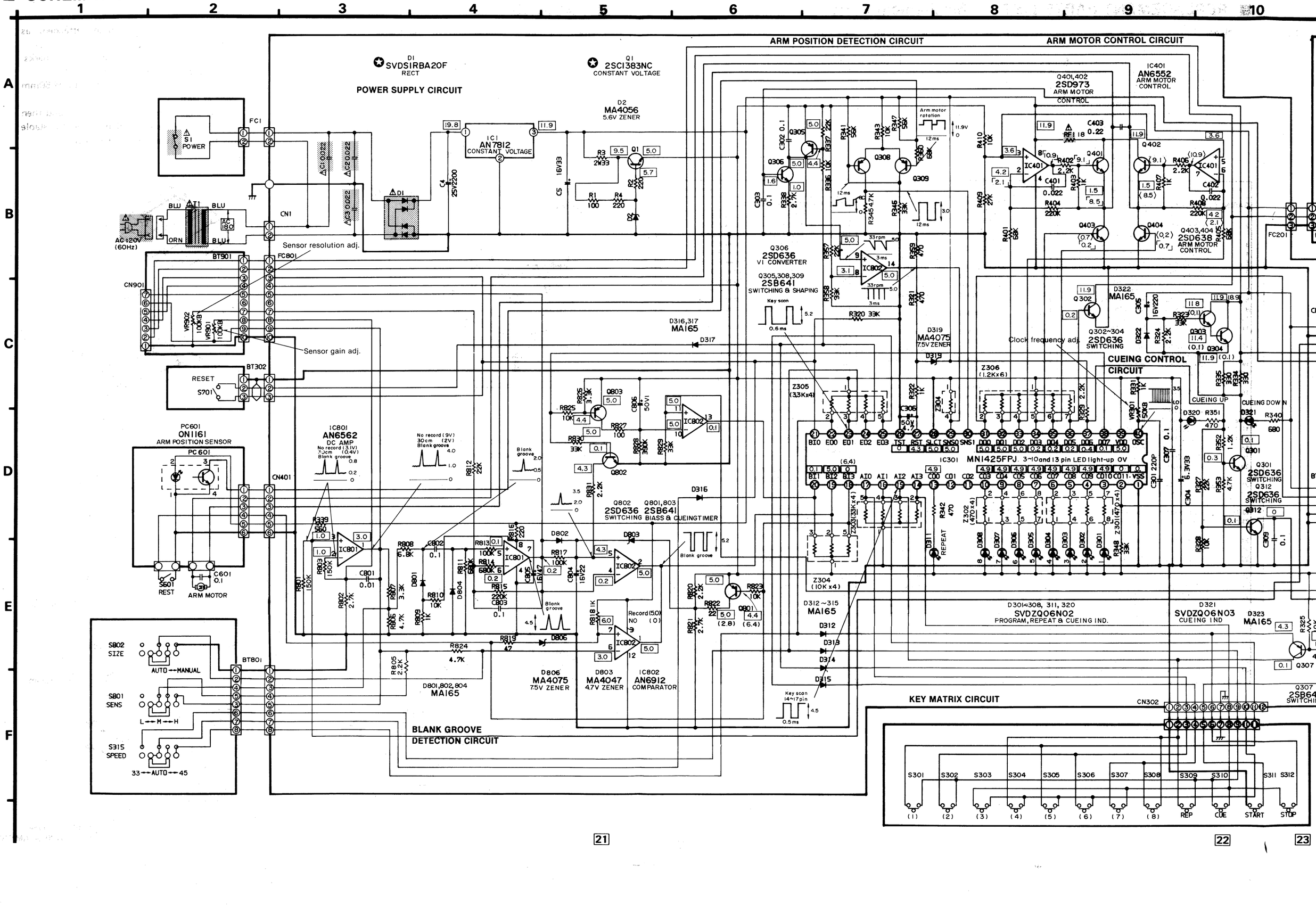
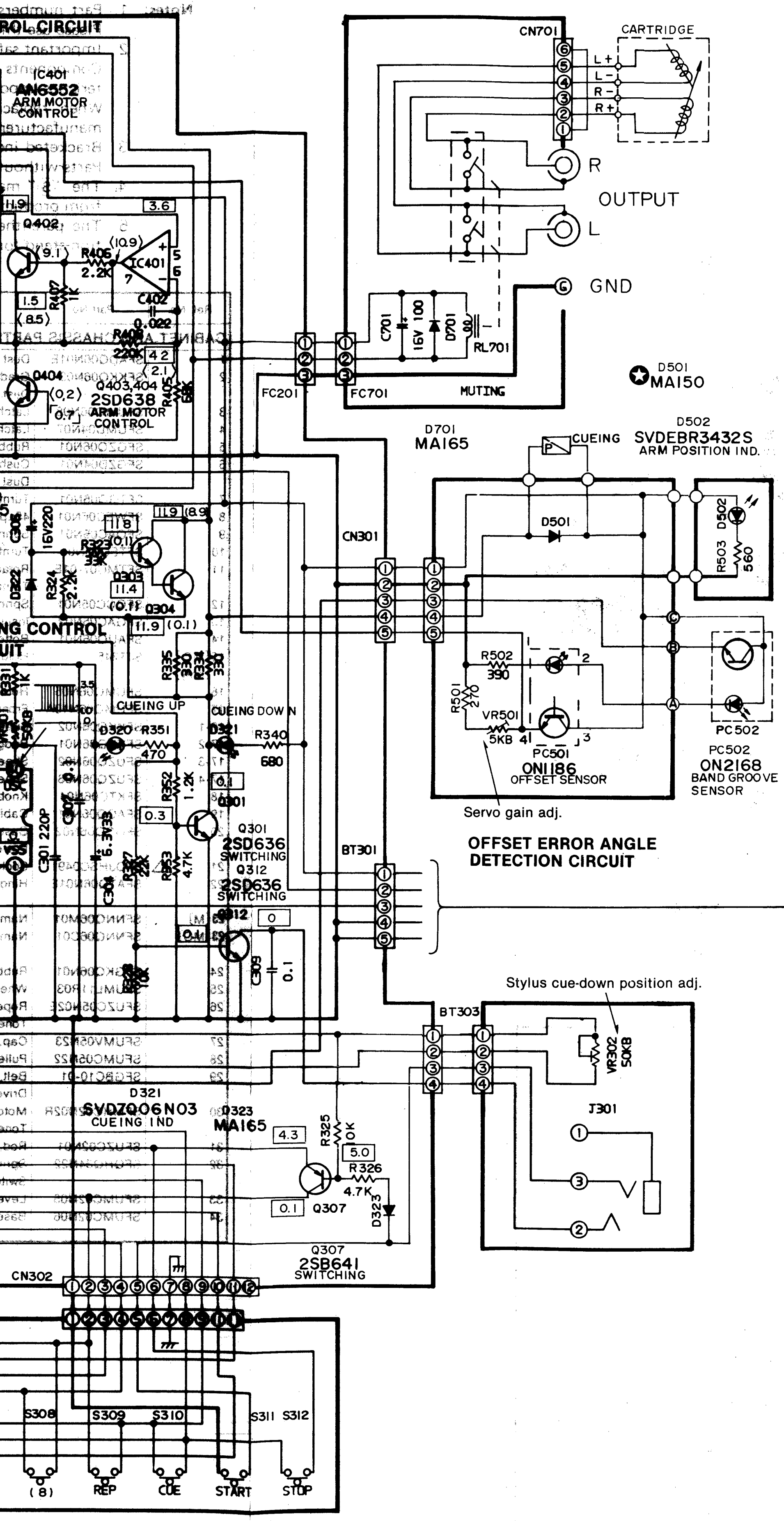
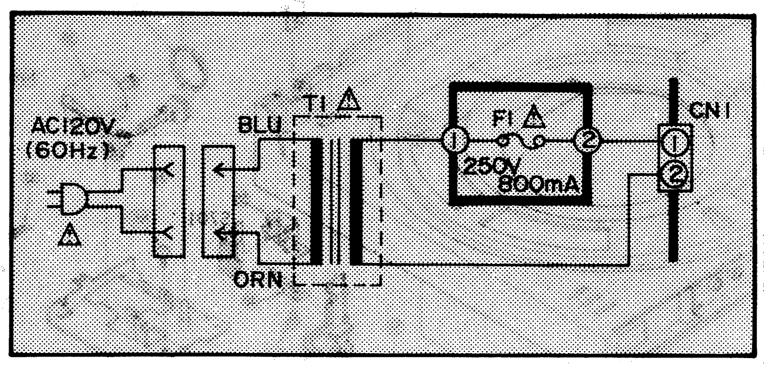



21 22 23



- **Power source circuit**
  **Product for [MC] only.**

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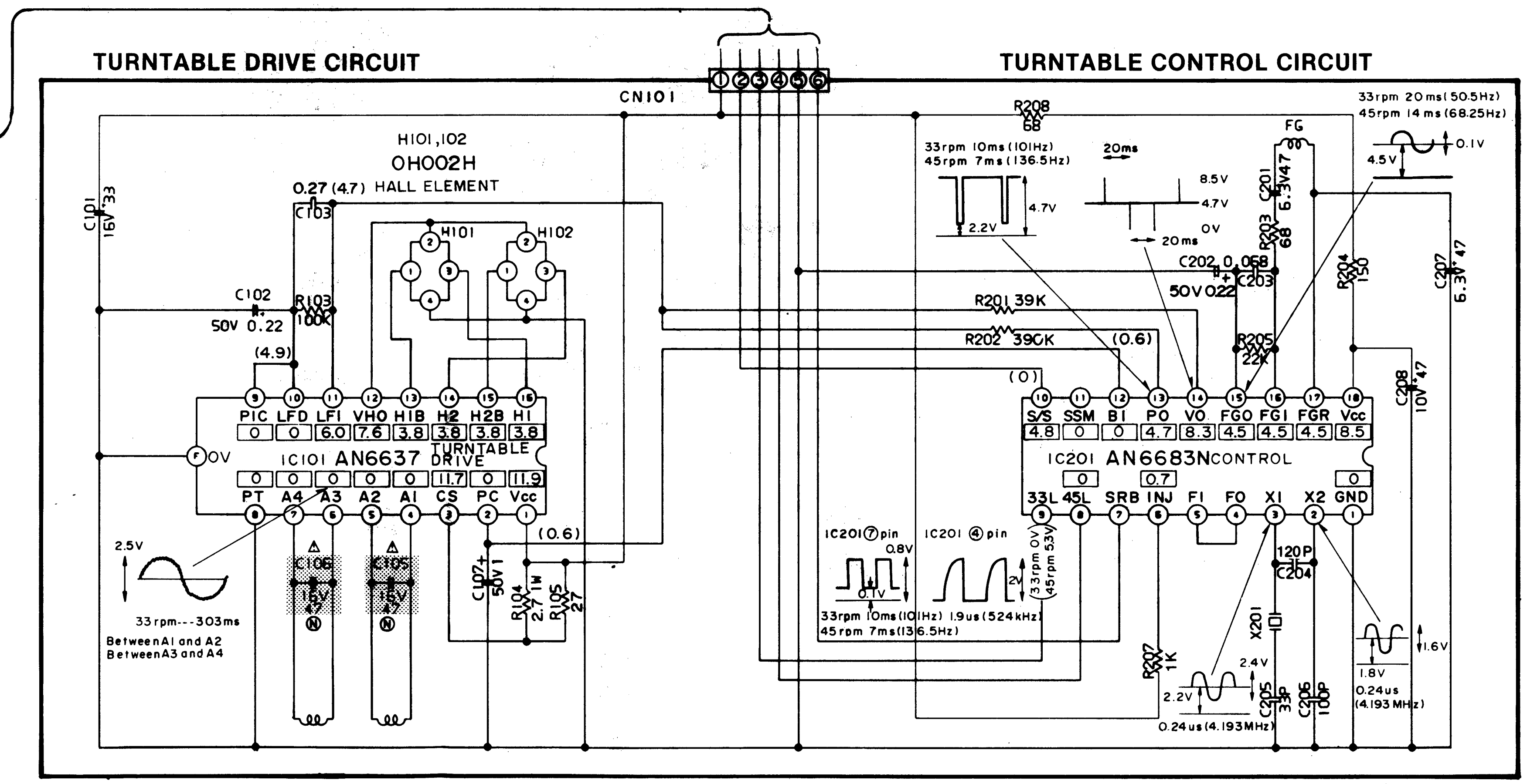
**TURNTABLE DRIVE CIRCUIT**

**TURNTABLE CONTROL CIRCUIT**



ORDER NO. DAD84030068T0

# Technical Information

Quartz Direct Drive Automatic Turntable System

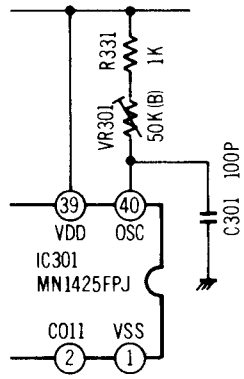
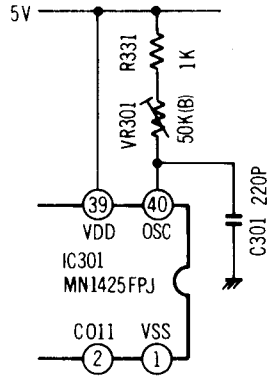
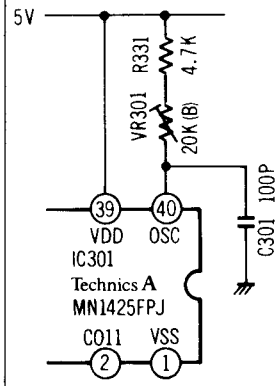
FILE THIS BULLETIN WITH YOUR SERVICE MANUAL.

# SL-Q6

## Re: Changing the MN1425FPJ oscillator circuit

Due to the instability of the oscillator circuit of the SL-Q6, the circuit and the MN1425FPJ micro-computer have been changed.
When calling for service, please carefully read the information below.

## ■ Details of Change

| Classification / Item | Serial No. Sheet Change mark [A] | Serial No. Sheet Change mark [B] | Serial No. Sheet Change mark [C] |
|---|---|---|---|
| Diagram |  |  |  |
| C301 | ECCD1H101K (100pF) | ECCD1H221K (220pF) | ECCD1H101J (100pF) |
| R331 | ERDS2TJ102 (1kΩ) | ERDS2TJ102 (1kΩ) | ERDS2TJ472 (4.7kΩ) |
| VR301 | EVN61AA00B54 (50kΩ) | EVN61AA00B54 (50kΩ) | EVN61AA00B24 (20kΩ) |
| IC301 | MN1425FPJ | MN1425FPJ | *1 MN1425FPJ |

*1 All micro-computers in Change mark [C] are indicated by an Ⓐ beside the MN1425FPJ mark.
Ⓐ - marked units require an MN1425FPJ replacement part.

Technics

**Matsushita Electric Trading Co., Ltd.**
P.O. Box 288, Central Osaka
Japan

**Matsushita Engineering and Service Company**
50 Meadowland Parkway
Secaucus, New Nersey 07094

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**Matsushita Electric of Canada Limited**
5770 Ambler Drive
Mississauga, Ontario, L4W 2T3

**Panasonic Sales Company Division of Matsushita Electric of Puerto rico, Inc.**
Ave. 65 de Infanteria, KM 9.7
Victoria Industrial Park
Carolina, Puerto Rico 00630

# ■ Service

**• In case of instability of the oscillator circuit.**

| Serial No. Sheet | Suggested for Remedy |
|---|---|
| Change mark [A] | 1. Connect the same capacitor, ECCD1H101K (100pF) to C301 (100pF). Or remove C301 (100pF) and then replace with ECCD1H221K (220pF).<br>2. Be sure to adjust the clock frequency. |
| Change mark [B] and after [C] | 1. It is not necessary to change the circuit, as it has already been changed to eliminate instability of the oscillator circuit.<br>2. If there is any problem, adjust the clock frequency. |

**• Replace the micro-computer MN1425FPJ**

| Serial No. Sheet | Suggested for Remedy | |
|---|---|---|
| | New micro-computer ("A" mark) | Old micro-computer (No "A" mark) |
| Change mark [A] | 1. Please adjust the clock frequency.<br>*You need not change the circuit. | 1. Remove C301 (100pF) and then replace with ECCD1H221K (220pF).<br>2. Please adjust the clock frequency. |
| Change mark [B] | 1. Please adjust the clock frequency.<br>2. If not able to adjust, please replace C301 (220pF) with ECCD1H101K (100pF).<br>3. Please adjust the clock frequency again. | 1. Please adjust the clock frequency.<br>*You need not change the circuit. |
| Change mark after [C] | 1. Please adjust the clock frequency.<br>*You need not change the circuit. | 1. Please replace C301 (100pF) with ECCD1H221K (220pF).<br>2. Please adjust the clock frequency again. |

*** Adjustment of the clock frequency**

| Preparation for adjustment | Site of adjustment | How to adjust |
|---|---|---|
| 1. Connect the emitter of Q1 and the pin ⑭ of IC301.<br>2. Connect the pin ⑬ of IC301 and the oscilloscope. | VR301 | 1. Turn the switch "on".<br>2. Adjust the period of the output sine wave of VR301 to 40$\mu$s ±2$\mu$s. |